Developing a Socio-Technical Process Framework for Information Systems Project Management in a Public HEI: A Case Study of Kuwait University

A Thesis Submitted to the University of Salford for the Degree of

DOCTOR OF PHILOSOPHY

College of Business and Law, Salford Business School

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APRIL 2017

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DEDICATION

I dedicate this project to Allah the Almighty, my creator, my strong pillar, my source of inspiration, wisdom, knowledge and understanding. He has been the source of my strength throughout this program and on His wings only have I soared.

I also dedicate this work to Prophet Muhammad (peace be upon him and his progeny), without them, I would not be at this level.

Nonetheless, I would like to honour with this work my parents; Hassan Alhabshi and Wajiha Alhabshi, who has encouraged me all the way and whose encouragement has made sure that I give it all it takes to finish that which I have started. To my 4 brothers and my sister, who have been affected in every way possible by this quest. Thank you. My love for you all can never be quantified. May Allah bless you all.

ACKNOWLEDGEMENTS

In the name of Allah, the Most Gracious the Most Merciful. First of all, Praise be to Allah, Lord of the Worlds. I am very grateful to the Almighty God for establishing me to complete this work. Your Mercy and Grace mitigated all the difficult times. Oh Allah, without You, I am nothing.

Secondly, I must pay tribute to my parents, Dr Hassan Alhabshi and Wajiha Alhabshi, for their limitless love and prayers and countless sacrifices. Their continuous encouragement and unceasing support has always been essential. My parents have been the key figures throughout my entire life, providing a bedrock of both stability and encouragement. Words are not enough to express what you both mean to me. You have been the biggest motivating force in my life and you will always be.

I would like to confer special thanks to every family member for all their loves and prayers, especially my 4 brothers and sister; Ammar, Haytham, Adel, Anwar, and Abdullah. Without your valuable support, prayers and sacrifices, I would not have reached this far and my whole life would not be as rich. You with the rest of the bigger family, one by one, gave me the confidence and supported me when I needed it the most.

To my dear supervisor, Dr Mostafa Mohamad, thank you from the heart. In terms of length of this journey, considering the circumstances, it might not have been as typical as other PhD journeys, but It was enjoyable and I have learned greatly during the year of your supervision. The support you have provided over this time has been truly humbling. I am very grateful for all your effort. It has been an honour and an enormous privilege to have had the opportunity to work with you, which I hope to continue in the future.

I would like to express special gratitude and acknowledgement to my previous supervisor, Prof Maria Burke. You have been my supervisor for so many years and I deeply appreciate every single moment of your contribution of me reaching this level.

In addition, I would like to acknowledge the contribution of my co-supervisor, Dr Aleksej Heinze, for his valuable contribution.

Also, I would take this opportunity to pay tribute my sincere thanks to all the faculty members and staff of the Salford Business School at the University of Salford for their help and encouragement, especially to Prof Ralph Darlington, the Director of Postgraduate Research in the College of Business and Law, and to Ms Michelle Jones for their enormous support to all postgraduate research students.

I record a special confer to my country, the State of Kuwait, and my scholarship sponsors represented by the Public Authority of Applied Education and Training (PAAET), which will be soon named as Jaber University in the near future. My gratitude for all the support.

I also place on record, my gratitude to every person who, directly or indirectly, have lent their helping hand in this venture.

Alhamdu'lellah for everything …

LIST OF ABBREVIATIONS

ANT	Actor Network Theory
BPR	Business Process Reengineering
ERP	Enterprise Resource Planning
ES	Enterprise Systems
CAIT	Central Agency for Information Technology
CCASG	Cooperation Council for the Arab States of the Gulf
CIO	Chief Information Officer
CIS	Centre of Information Systems
CRM	Customer Relationship Management
CFS	Critical Factors of Success
CSB	Central Statistical Bureau
CSF	Critical Success Factors
CTC	Central Tenders Committee
DBA	Database Administrator
EIS	Enterprise Information System
ERP	Enterprise Resource Planning
GT	Grounded Theory
GTM	Grounded Theory Method
HE	Higher Education

HEI	Higher Educational Institutions
HR	Human Resource
ICT	Information and Communication Technology
IMP	Implementation
IS	Information System
ISD	Information Systems Development
ISDP	Information Systems Development Project
IT	Information Technology
KDP	Kuwait Development Plan
KU	Kuwait University
KUCIS	Kuwait University Centre of Information Systems
ME	Middle East
MIS	Management Information Systems
MoE	Ministry of Education
MoHE	Ministry of Higher Education
MP	Member of Parliament
MS	Microsoft
MV	Multiview
NA	National Assembly (the Kuwaiti Parliament)
OS	Operating System

PAAET	Public Authority for Applied Education and Training
PhD	Doctor of Philosophy
PM	Project Management/Manager
RFP	Request For Proposal
SDLC	System Development Life Cycle
SAB	State Audit Bureau
SI	System Integration
SIS	Student Information System
STS	Socio-Technical System
STT	Socio-Technical Theory
TAM	Technology Acceptance Model
TED	Training & Education
TF	Theoretical Framework
UK	United Kingdom
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organization
US	United States
WEF	World Economic Forum

ABSTRACT

The observable variety in Information Systems projects outcomes is a global phenomenon, and IS projects in the State of Kuwait are no exception. The participatory approach of managing IS projects by including key stakeholders (e.g. top and middle managers, IT support, external vendors, consultants, and users) became a commonly accepted fashion both in public and private institutions to improve project efficiency and effectiveness. The consensus is that IS project success relies on interlinked factors that support/hinder those stakeholders in reaching their planned goals. Accordingly, these factors are socio-technical as they continuously affect the interplay between the social sub-system and technical sub-system of the IS project. Aiming to understand the status quo of IS project implementation at Kuwait University, this thesis adopts McLeod and MacDonell's framework (2011) supported by the Social-Technical Theory (Mumford, 2006). Both led the researcher to explore different factors that affect individual's actions, development process, project content, and the overall project outcomes in Kuwait University (as a public institution).

The Kuwaiti context is under-researched and required an interpretative research approach to shed light on this developing context and address the expanding west-east digital divide. In doing so, a qualitative case study was best suited to help capture the social construction of those success factors and reveal their constructive influence on the IS project success/failure.

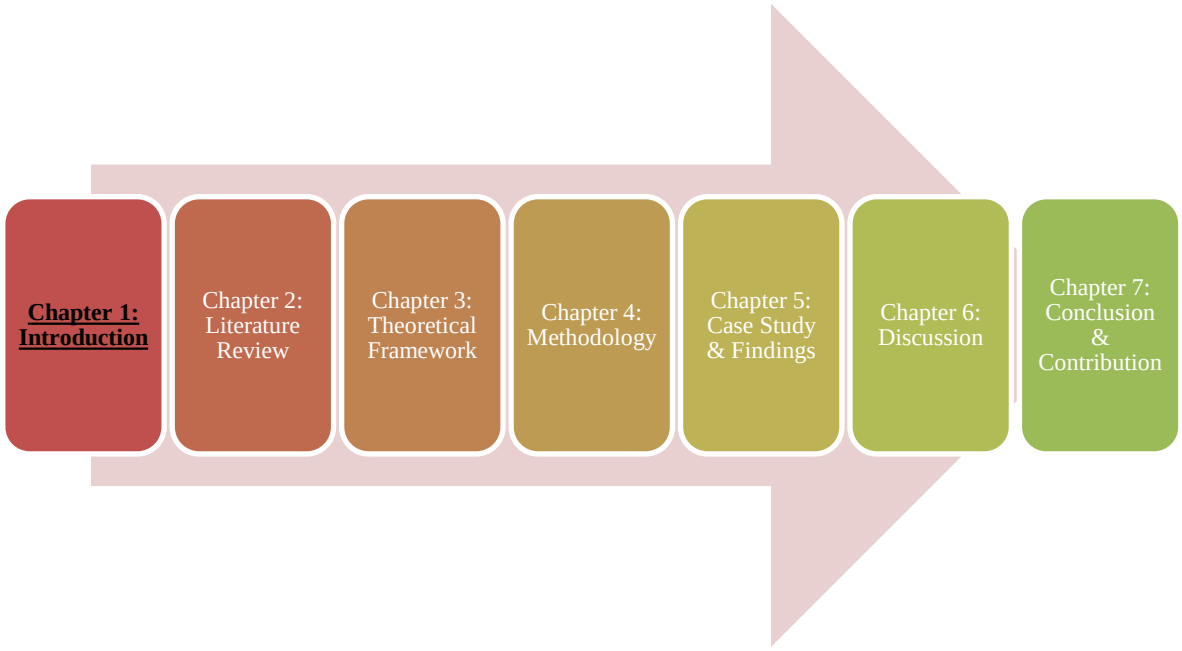
Out of 23 semi-structured interviews, our findings refer to an "*event*" as a temporal instance that causes turbulence/imbalance between individual's actions, the development process, and project context. During these incidents, the project outcomes respond differently to the institutional environment. Further, our evidence pointed to two layers of institutional factors that reflect completely different epistemological grounds; country-level versus organisational level. While the former reflects the political factors that shape the outcomes of IS projects in the State of Kuwait in general, the latter reflects socio-technical factors that apply on educational IS systems developed in Kuwait University.

Theoretically, a revised model of educational IS development has been developed to reflect the temporal dimension that shapes the development process and the project outcomes. McLeod and MacDonell's process-based framework offers a socio-technical view that is untapped in the original framework and helps set out the right policies and practices of IS project management for practitioners and regulators in Kuwait University. Furthermore, the political and cultural insights offered by the research participants would assist western universities while developing IS educational projects in Kuwait through franchise entry mode or distant learning.

Keywords:

Socio-technical Theory, Information Systems Project management, Critical Success Factors, Higher Education, The State of Kuwait.

CHAPTER ONE


Chapter 1: Introduction
Chapter 2: Literature Review
Chapter 3: Theoretical Framework
Chapter 4: Methodology
Chapter 5: Case Study & Findings
Chapter 6: Discussion
Chapter 7: Conclusion & Contribution

1. INTRODUCTION

1.1 Outline of this chapter

This chapter introduces the research study and provides a background that sets the stage for the problem under investigation. The aim of this research is to identify a framework of factors that lead to successful implementation of Information Systems (IS) projects in governmental Higher Educational Institutions (HEI) and highlights the variety of issues that influence outcomes in IS projects from a socio-technical lens. The chapter then briefly outlines the research before presenting its aim and objectives. The following two sections examine the significance of this research area, the motivation for this research, and its potential contributions to knowledge. The final section presents a summary of this chapter.

1.2 Research background

Increasingly publications on IS development focus on success and/or failure factors rather than merely concentrating on aspects of financial gain and how other critical issues can be overcome (DeLone and McClean, 1992 and 2003; Lyytinen and Hirschheim, 1987; Sumner, M. 1999; Scott and Vessey, 2002; McLeod and MacDonell, 2011; and many others).

Critical Success Factors (CSF), or critical factors of success (CFS), have been used commonly to describe or identify key factors that organisations should focus on to be successful. CSFs refer to areas in which satisfactory results will ensure successful competitive performance for the individual, department, or organisation (Rockart, 1979, p.85).

Some researchers suggest that the concept of projects success cannot be evaluated without adequately defining the evaluation dimensions (Baker *et.al*, 2008; Morris and Hough, 1987, and Turner and Muller, 2005). In general, the evaluation dimensions of any project correspond to traditional constraints, such as: budget, time, and quality (Atkinson, 1999). In his well-known paper, Atkinson (1999) defines these 3

dimensions as the "*Iron Triangle*" for evaluating project performance. In the same vein, Ashley *et. al* (1987, p.71) indicate that project success should show:

> "*results better than expected or normally observed in terms of cost, schedule, quality, safety, and participant satisfaction*".

A study by Mengesha (2004) indicates that critical success factors researches has been undertaken since 1967. The paper also demonstrates that the development of information on critical success factors was based on both theoretical and empirical studies (Baker *et. al*, 2008; Tukel and Rom, 1995; Belassi and Tukel, 1996; Pinto and Kharbanda, 1995). Another study by Cooke-Davies (2002) marks the existing differences between project success and project management success; as well as differences between success criteria and success factors. Data was gathered from 136, mainly, European projects that were developed by 23 organisations between 1994 and 2000, with a cost of over $300 million. Cooke-Davies (2002) concluded there are several links between both project success and corporate success. The links were considered to be intrinsic to the general corporate strategy, business operations, research and development, IT/IS development, and facilities provision and management.

This work builds on these past studies by adopting the framework of McLeod and MacDonell in Kuwaiti academic organisations, specifically the HEI in the governmental sector. This work adopts their framework of factors that have an impact on the outcome of IS projects within Kuwait University (KU). This will provide Kuwaiti organisations involved in future IS projects with a foundation on which strategic plans can be developed and achieve better outcomes.

Identifying and verifying a framework of critical influential factors on IS projects that considers organisational social aspects in addition to technical aspects, would provide opportunities for improving IS project performance within the governmental sector of the State of Kuwait. This current research determines relevance and applicability of this framework for Kuwait University, with its inherently unique Middle Eastern culture, political system, environmental issues and influences.

The overall research approach involved conducting interviews in relation to the implementation process of two IS projects conducted and delivered at Kuwait University. The state of practice survey explored elements that affected these projects' outcomes through feedback from the participating IS project manager and team members. Interview narratives were gathered though semi-structured interviews to provide in-depth data for this study. The targeted participants were IS project practitioners of the Centre of Information System (CIS) of Kuwait University who were involved in the selected projects.

1.3 Profile of the State of Kuwait

In order to understand the area of concern of this study to the fullest, it is important to have an overview on the country profiles under study. The following section provides an in-depth discussion about the State of Kuwait from an exploratory perspective based on general facts. The section presents the impact of different indicators of the country on the government organisations including its academic institutions.

1.3.1 Background

The Kuwaiti constitution clearly states, *Article (2)*, that Islam is the state religion and that Islamic law (Sharia) is a main source of legislation. It also calls for "absolute freedom" of belief and for freedom of religious practice in accordance with established customs, which conditioned that it does not conflict with public order or morals. *Article (1)* of the constitution states that Kuwait is an Arab State and *Article (3)* indicates that Arabic is the official language of the State. However, English language has been taught since early levels in schools and it is widely spoken as a second language.

The capital of the State of Kuwait is Kuwait City. The name *'Kuwait'* comes from the Arabic word *'Kut'* meaning a small fortress. Historically, this area was called *'Qurain'*, which has a source in the word *'Qarn'* meaning a high hill. The country's name provides strong evidence to the importance of its role as strategic location for commerce, trade and control of navigation through the centuries. Although the history

of Kuwait can be traced back thousands of years, the modern country is relatively new. It begins at the end of the 17th century with the arrival of several tribes from other parts of the Arabian Peninsula.

1.3.2 Geography

Geographically, Kuwait is one of the developing countries located in the North-Eastern part of the Arabian Peninsula. Bordering, the North-Western edge of the Persian Gulf (locally named as the Arabian Gulf). It also shares borders with Iraq to the north and Saudi Arabia to the West and South. Kuwait has a total area of 17,818 square kilometres (see Figure 1.1).

Kuwait has (9) islands in total, all of which are uninhabited except one, the Failaka Island. The largest island is Bubiyan with a total area of 860 square kilometres, which is connected to the country's mainland by a little bit more than two kilometres long bridge.

1.3.3 People and society

Kuwait's Public Authority for Civil Information (PACI) estimates the country's total population to be 4,409,354. As it can be seen in (Figure 1.2), native Kuwaities numbered 1,344,107 (30.5%), outnumbered by 3,065,247 non-Kuwaities accounting for almost (69.5%) (March 2017 est.) (PACI, 2017).

The Kuwaities gender ratio (1.04%) shows almost an equal balance with (49%) males and (51%) females. However, the gender ratio for the expatriates show a considerable difference with (67%) males and (33%) females respectively, which impact on the total population gender ratio with (61%) males and (39%) females respectively (PACI, 2017).

Though the major religion is Islam, (76.7%) of total population, the society in Kuwait enriched with diversity and tolerance. The majority of the population is Sunni Muslim; however, the Shia Muslims represent a significant minority in the State. Kuwait and Bahrain are the only two GCC countries that have local population of Christian citizens. The State's official language is Arabic; however, English is widely spoken.

Figure 1.1: Map of the State of Kuwait.

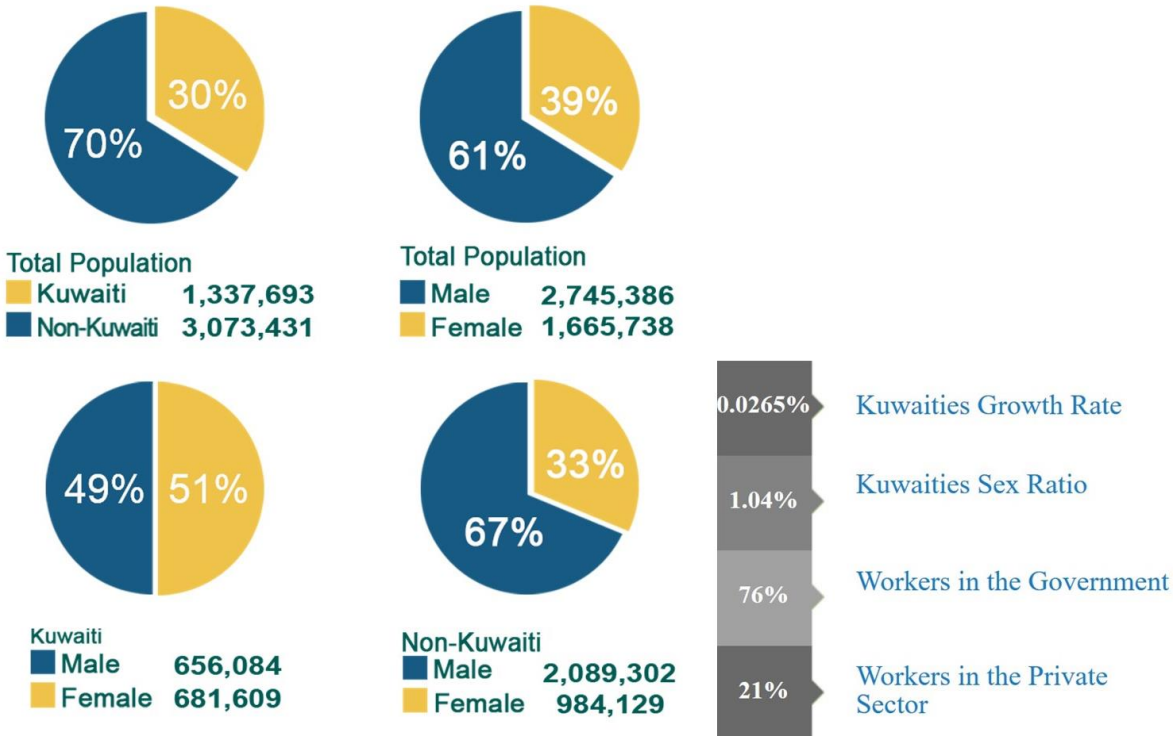


Figure 1.2: Kuwait Population Statistics (PACI, 2017).

1.3.4 Economy

Kuwait is one of the country members of the Cooperation Council for the Arab States of the Gulf (CCASG). Kuwait is a member of the Organization of Petroleum Exporting Countries (OPEC). The main source of income for this confederation system is crude oil, which enriches the territory of its countries in varying degrees. Since oil fields were first exploited in the 1930s and the independence in 1961, oil has dominated Kuwait's economy, making up around (90%) of export revenues (United Nations, 2004).

The Kuwaiti currency, the Kuwaiti Dinar, has the world highest-valued unit of currency. In its latest International Comparison Program Database, the World Bank (2016) ranked Kuwait 2nd out of the 6 GCC countries (after Qatar), and the 6th world richest GDP per capita.

The oil prices saw an unprecedented spike during the period from 2000 to 2008, going from under $25 per barrel to around $150 per barrel because of the production cuts by

OPEC in the Middle East and the rapidly increasing demand in emerging economies such as China and India drove the prices of oil to its record heights ever.

Shortly thereafter, by the end of 2008, a deep worldwide recession throttled demand for energy and sent the prices of oil and gas into a precipitous free fall. The oil prices had bottomed out at $40 causing a serious crisis to some oil production countries. Although, the economic recovery that began in 2009 sent the prices back to over $100, the oil prices hovered between $100 and $125 until 2014, when it experienced another steep drop due to the contribution of numerous global economic factors.

1.3.5 Politics

As one of most democratic and liberal countries in the Middle East (as often described), Kuwait established their parliament in 1963 as part of the country's first post-independence constitution. The Kuwaiti Parliament is considered to be the oldest and most powerful all-elected body of its kind of any in the region.

Kuwait is the closest to having a constitutional monarchy of the Arab Gulf countries, which are ruled by hereditary monarchs. Although most political power still lies with the ruler and his family, the Kuwaiti constitution and the elected parliament (locally called the National Assembly) compose together some real constraints on the ruling Prince (the Emir) and his powers on the constitutional authorities.

Fifty elected members of parliament (MPs), who represent five 10-seat constituencies, are forming the Kuwaiti National Assembly. Alongside them sit unelected cabinet ministers, who grant automatic membership and enjoy the same voting rights as other MPs. Moreover, the Kuwaiti's constitution states that at least one elected MP should be included in the government. Beside the law-making powers, the Kuwaiti parliament can hold the government to account and has the power to veto their decisions. Even though the prime minister is appointed by the Emir, the parliament has also the power to dismiss the prime minister or any minister. However, the Emir has the final decisions in policy making.

In general, Kuwaitis are valuing the existence of a parliament, though they have their reasons to criticise it and frustrate with it. Since the first parliamentary election after the Iraqi invasion of Kuwait in 1990, the Kuwaiti parliament was subjected to sporadic dissolutions for various reasons. Furthermore, none of the parliaments managed to complete their four-year tenure since 2003. Therefore, there are growing appeals from the citizens for more political stability to be able to address and resolve the challenges facing the country more effectively. As a result, the Kuwaiti parliamentary experience and its achievements and failures perceptions, have impacted on the ways in which the notion of having a parliament and the idea of democracy itself, are perceived in the other Arab Gulf countries.

In the early hours of the 2nd of August 1990, more than 100,000 Iraqi soldiers backed up by 700 tanks, helicopters and trucks across the border into Kuwait. The Iraqi invasion of Kuwait lasted about 7 months, leaving behind a full destruction of the State's infrastructure. On the 17th of January 1991, the international community led by the United Nations launched the second Gulf War, codenamed Operation Desert Storm, after agreeing on the necessity of the liberation of Kuwait from the hostile army. This operation resulted to the liberation of the entire territory of Kuwait on the 28th February 1991.

The post-war called for the need of rebuilding and the reconstruction of all the elements of the State. The invasion and occupation had a transformative effect on almost every aspect of Kuwaiti life. After the war, the Kuwaiti government announced the national plan to reconstruct the country and to rebuild its infrastructure.

1.3.6 Education

The increase in productive capacity of the oil industry after the liberation of Kuwait led to the recovery of the economy. As a result, the governmental organisations and institutions performed huge development projects in various fields. One of the main concerns of the government was the technological development and the construction of information systems especially in its academic institutions. In addition, the Kuwaiti educational sector has taken a developmental turn. The government took ample steps in

investing the maximum amount of funds toward the growth and development of Kuwait Education. The governmental academic organisations and higher educational institutions in Kuwait, such as Kuwait University (KU) and the Public Authority for Applied Education and Training (PAAET) are affiliated with the Ministry of Education (MoE) that operates under the Minister of Higher Education and Minister Education (MoHE).

Since the fall of oil prices in 2014, the governments in the gulf region start to following rationalisation and resource saving policy in their bodies, including HEI's in the public sector. KU and PAAET became more resource constrained, with government funding decreasing and they are considering better management of resources, which put high interest on their IS projects as one of the main reasons for budget consumption, on one hand, and as a tool to stop wastage and better management of other resources, on other hand.

1.4 Aim and objectives

This research study aims to explore a different variety of conceptual frameworks and models for IS project implementation, and examines how McLeod and MacDonell's holistic framework considers different themes:

- *People and Actions*,
- *Project Content*,
- *Development Process*,
- and *Institutional Context* that contains all critical factors as well.

To an extent their framework fails to demonstrate how these elements interplay to shape IS project outcomes, and overlooks the socio-technical view of information systems. Such a view is necessary to truly understand the Critical Success Factors (CSF) in developing contexts (e.g. Kuwaiti Higher Education Institutions (HEI)), where the technological artefacts fail to align with social subsystems (e.g. administrative departments and academic faculty).

The key research consideration is to identify a framework of factors influencing the success and/or failure of IS project implementation in the State of Kuwait and similar contexts where there is a reflection of the interrelationship between social and technical subsystems. This research focuses on critical factors that impact the IS project outcomes from the perspective of an academic institution in the governmental sector (Kuwait University). As such, this study proposes to use the descriptive framework developed by McLeod and MacDonell (2011) as a lens. Through this lens, from a socio-technical perspective, an explain and interpret the interplay between different technical and social factors which influence final project outcomes.

With this in mind, the objectives of this research are as follows:

1. To explore the extent to which McLeod and MacDonell's framework (2011) aids understanding of the processes of an IS implementation and its outcomes in a public HEI in the State of Kuwait.
2. To map the flow of social and technical factors during the implementation process and their impact on the final outcomes of IS projects. This will identify a framework of critical factors affecting the implementation of IS projects and their outcome fitting with the environment of governmental organisations in the State of Kuwait and similar contexts.
3. To develop understanding of practices, philosophies and theories related to CSFs in IS projects.
4. To understand the mechanism of interplay between the CSF and the way these co-evolve shaping IS project outcomes.
5. To develop guidelines for IS professionals in governmental HEI in the State of Kuwait to improve current practice when implementing IS projects.

1.5 Rationale

Difficulties with implementation of information system projects have been a subject of discussion in books, papers, conferences, and workshops for over four decades (Brooks, 1974; Lucas 1975, 1981; Rockart, 1979; Rockart, 1982; Lyytinen and Hirschheim, 1987; Johnson, 1995; Krishna and Walsham, 2005). There are many indications that IS project developments are fraught with recurring problems caused by poor, unstructured, and incomplete development practices.

Typically, as with any project, the relationship between time and cost is inseparable, whilst the relationship between time and effectiveness are inversely related as shown in Figure 1.1. According to an early survey referenced by Gladden (1982), 75% of all systems development undertaken is never completed or, if completed, does not end up being used. In a similar vein, Canning (1977) points out that 70%, an inordinate amount of total life-cycle costs, is spent on "*System Maintenance*" which is a symptom of poor development practice. This indicates that the development process, especially in its early phases, is of low quality (Bell and Thayer, 1976). These early studies could not address the challenges associated with IS project implementations.

Verkerk *et al.'s* (2000) study found that failure rates of information system development projects (ISDP) in the 1980s and 1990s were routinely documented at above 50%. Moreover, the larger the IS development project, the greater was the increased likelihood of its failure.

These rates have not improved significantly since these early years. A 1994 study of IS development projects within the UK public sector estimated that 20% of expenditures were wasted, and a further 30 to 40% produced no perceivable benefits (Wilcocks, 1994). A US study conducted in 1995 looked at more than 8,000 IS development projects and revealed that only 16% were completed on time within their planned budget (Johnson, 1995).

Furthermore, in 1999, projections forecasted that over 70% of "*Fortune-1000*" corporations worldwide either had already or would soon install ERP systems. These reports forecasted that ERP systems were penetrating small and medium size

enterprises with net revenues of around $250 million (Bingi *et al.*, 1999, p.7). However, Conboy (2010), reported that:

> "*Various studies have found that between 40 and 60% of ISD projects fails to meet budget estimates and that the degree of overspend can exceed 200%*" (Conboy, 2010, p.273).

According to Heeks (2003), who has carried out considerable research into Information Technology (IT) in Developing Countries (DC), most implementations of e-government projects in developing countries fail. In his paper, he presents estimated figures about rates of success and failure of e-government projects in developing and transitional countries, stating that 35% of these projects were classified as complete failures, where the e-government was not implemented or was abandoned immediately after the implementation. Moreover, 50% were classified as partial failures, where major goals were not achieved or the outcomes were undesirable. Only 15% could be classified as successful (Heeks, 2003).

In relation to this subject Avgerou and Walsham (2000, p.1) conclude:

> "*successful examples of computerisation can be found ... but frustrating stories of systems which failed ... are more frequent*".

Such facts are disturbing, considering the waste of money, time and efforts, and the fact that many developing countries have limited resources at their disposal. Failing to control large speculative investments on such projects for these nations undoubtedly have negative impacts on them. However, the challenge remains to address and resolve these difficulties.

For reasons outlined above, this research makes a contribution by questioning the often unrealistic expectations about the outcome of IS projects to deepen our understanding of how the implementation of these projects works from social and technical perspectives.

Despite the global economic crisis that has affected countries throughout the world, particularly major industrialised countries, there has been no decrease in IT development spend worldwide. In 2014, total worldwide annual spend on IT was expected to exceed $3.8 trillion US dollars per year and has grown by about 3.1% from the 2013 spending of $3.7 trillion US dollars (Gartner, 2014). In the Middle East, the Cooperation Council for the Arab States of the Gulf (CCASG) invests generously in the acquisition of new and emerging technologies. In 2012 Kuwaiti IS/IT spending was approximately $939 Million US Dollar (Approximately £593 Million Pound Sterling) (Research and Markets, 2012). With such enormous amounts of money being spent on IS/IT, one would expect a body of research devoted to the assessment of which forms of IS/IT expenditure are most effective and efficient. However, despite a good ICT-related infrastructure development, Kuwait depicts a fairly poor rate of ICT usage.

In its 2012 annual Global Information Technology Report, the World Economic Forum (WEF) ranked Kuwait 62nd of 142 countries on its IT networked readiness index. This grades economies based on IT usage, acceptance and efficiency (Global IT Report, 2012). All the member states of CCASG are ranked higher than Kuwait in WEF rankings, with Bahrain, Qatar, the UAE, Saudi Arabia and Oman featuring in the top 40. This has raised the question as to whether IT systems functionalities in Kuwait are fully exploited. Uhlenbruck *et al.* (2006), suggests this problem may occur for two reasons:

1. The full functionalities of some systems that have been implemented may remain unknown or unused;
2. Or there is a potential of hidden corruption.

This explains why it is important to realise the main contributing factors behind such problems, and whether issues of knowledge, integrity or other factors lay behind them.

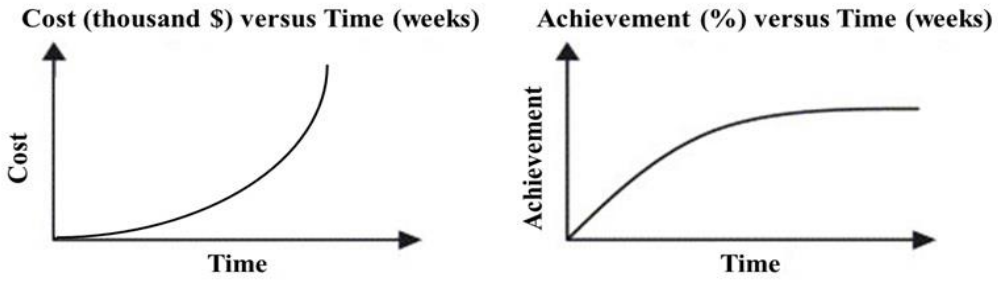


Figure 1.3: Typical relationships of cost vs. time, and goal achievement vs. time of projects

In the last four decades, researchers have shown increased interest in the factors that influence the outcome of IS projects. However, there is a lack in the literature concerning this issue in Kuwait and other Middle Eastern regional countries. The extant literature has failed to provide rich insight into the factors leading to successful implementation of IS projects. This study therefore makes both academic and practical contributions in this area.

There are currently no reliable frameworks for how IS projects could be successfully implemented within the Kuwaiti environment. Thus, this raises the need to study factors that affect information systems project outcomes in Kuwait and adopt a suitable framework based on actual research findings. This study is the first of its kind to be conducted within the State of Kuwait. It generates new findings in relation to the application of a framework based on McLeod and MacDonell's (2011) model taking into account the interplay between the social and technical subsystems to address the gaps in the literature. Hence, there is strong need for a system of thinking based on McLeod and MacDonell's framework to explain how it is shaping the outcome of IS projects. Therefore, findings in this study develop a greater understanding of its context as a contribution to the general body of knowledge.

1.6 Research questions

Q1: To what extent does a socio-technical version of McLeod and MacDonell's framework help explain the critical success factors in the IS projects of Kuwait University?

Sub-Q1.1: How do the factors highlighted in McLeod and MacDonell's framework affect the implementation and outcomes of IS projects in Kuwait?

Sub-Q1.2: What CSFs affect the outcome of IS projects in Kuwait University?

Sub-Q1.3: How do these CSFs interplay and shape the processes of IS project implementation in Kuwait University?

Q2: What CSFs were addressed during the implementation of IS projects in the context of Kuwait University and how did these affect outcomes?

1.7 Contribution to knowledge

Application of IS research models to Middle Eastern (ME) contexts offers some answers to substantial knowledge gaps as discussed in the following chapter. These gaps include the application of micro-contingent variables to a Kuwaiti higher-education context, which has as of yet been under-investigated. The evaluation of risk minimisation strategies and the possibilities of integrating recently graduated computing students into technical and managerial positions in educational enterprises have not yet been evaluated. As a resource-rich nation, successful IS implementation models will increase prospects for multi-national IT firms to offer support to Kuwaiti public and private-sector organisations.

At present, the majority of factors in research focus on Western contexts, which do not include issues such as IS outsourcing which is intensively employed within the Kuwaiti context. Implementation of a similar system in Kuwait would be likely to address cultural issues such as the efficient transfer of knowledge to permanent management in Kuwaiti companies, moving away from temporary expatriate IT specialists. In the case

of Kuwait University, power and politics will be likely to form a significant factor: the overall organisational layouts in the majority of Middle Eastern countries tend to focus on singular, executive-level control. However, the majority of IT worker in Kuwait are contractors who are by nature resistant-to-change: this should be considered a significant factor as the lack of skills resulting from change will need to be addressed by recruitment or additional staff training.

Through the findings of the present study, a conceptual framework is identified, based on abstracted and synthesised socio-technical perspectives of factors that affect IS project outcomes. This research develops a socio-technical framework of critical factors required to implement IS projects fitting the Kuwaiti environment within governmental organisations. The framework is more than a list of critical success factors, it also examines the associations between these factors and how they are influenced by the social and technical subsystems. This framework may provide the country with appropriate planning and solutions that insure the achievement of a greater level of success.

The lack of research concerning the process of IS projects in higher education institutions, especially in the Arab world, emphasises the need for further research. There may be specific differences between the world regions related to cultural and regional variance and specifications. This study provides an opportunity for scholars to continue further studies that optimise the processes of implementing IS projects. It also highlights that academic research is needed to fill the gap in the literature.

1.8 Research motivation

This research is motivated by challenges arising from the growing size and complexity of modern pattern recognition problems in IS projects. The researcher has developed some knowledge about these issues through his 5 years' experience of being in a technical role working at the Centre (Department) of Information Systems with Kuwait University (KUCIS) as a Database Administrator (DBA) from 2005 - 2009. The researcher was part of the database section, which is considered one of the core

technical sections of the KUCIS and plays a significant role in almost every IS project. The researcher was involved in many medium and large-size IS projects during these 5 years. Moreover, he was assigned team management responsibility for several IS projects, which have all been successfully implemented and delivered.

Thus, this research study proposes the provision of a theoretical framework for improved implementation of IS in the governmental sector in the State of Kuwait. The practical nature of this research will inform a better understanding of the factors affecting the outcome of IS projects. In consequence, the current research will also provide better understanding of the future challenges facing IS projects in governmental sectors.

1.9 Overview of the thesis structure

The key research aim is to identify a framework of factors that influence the success and/or failure of implementation of IS projects in the State of Kuwait and similar contexts reflecting of the interrelationship between social and technical subsystems. This will be achieved using a qualitative case study research approach examining two IS projects conducted at Kuwait University. The main source of data is 23 semi-structured interviews and various data sources of archival documents. This section outlines the chapters in this thesis, which broadly divide into 7 chapters (see Figure 1.4).

• *Chapter One – Introduction:* Outlines a background of the current thesis and introduces the aims and objectives of the research. Provides a background to the State of Kuwait and discusses the area of concern of this research. It presents the research questions, the significance and purpose of the research, and also presents the researcher's background and motivation. This chapter outlines the structure of the thesis.

• *Chapter Two – Literature Review:* Discusses the various viewpoints in the literature regarding the implementation of IS projects and the critical factors affecting its

outcomes. It also provides discussion about some of the popular models and frameworks of critical factors affecting IS projects.

• *Chapter Three – Theoretical Framework:* Provides an overview of IS research theories. It reviews and proposes a theoretical framework, together with a method for the application of the framework.

• *Chapter Four – Research Methodology:* Discusses the research philosophical paradigms, approaches and strategies. It also outlines suitable tools and methods used for conducting this research and for data collection. Finally, it discusses the selected method and techniques for the qualitative data analysis.

• *Chapter Five – Case Study and Findings:* Provides an in-depth insight of the Kuwaiti context and a review of the elements of governmental organisations, such as regulations and culture. Sheds light on the public HEI's in Kuwait, particularly Kuwait University. Also, sets out an analysis of data extracted from the 23 interviews carried out with team members from two IS projects conducted at Kuwait University, alongside data collected from the archival documents.

• *Chapter Six – Discussion*: Discusses the findings of the qualitative data analyses prepared using a Socio-Technical System theory, ETHICS.

• *Chapter Seven – Conclusion:* Presents an overview conclusion of the research and the contribution to knowledge of this work. Also, recommendations and suggestions for further studies are made and limitations of the current study are discussed.

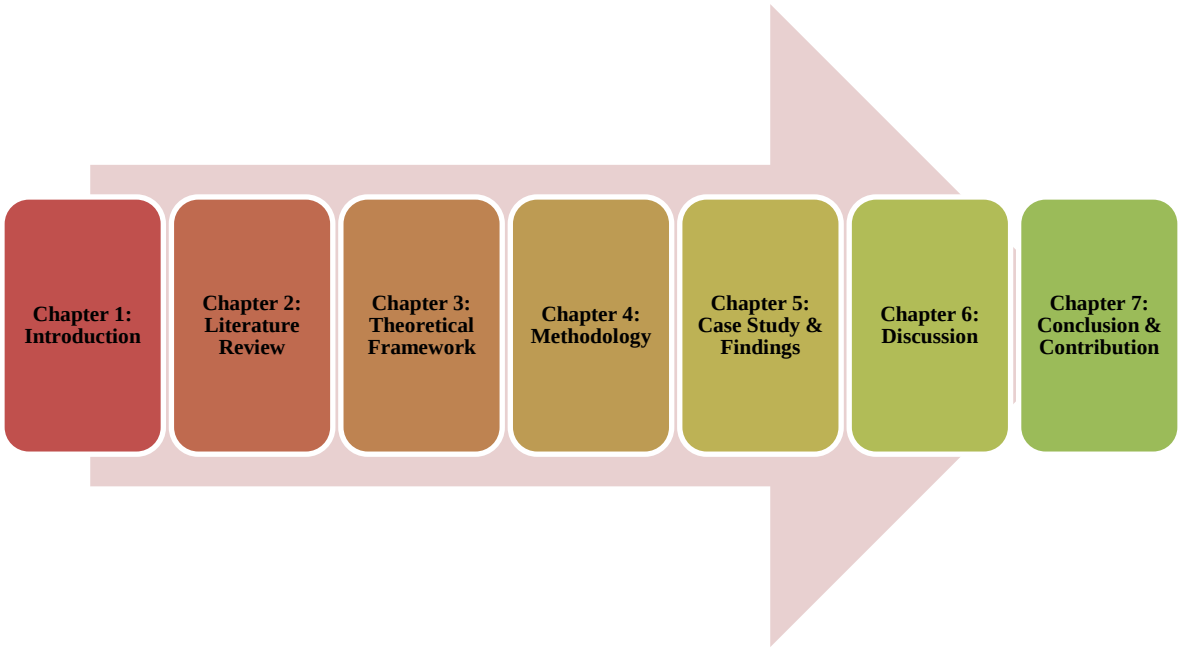
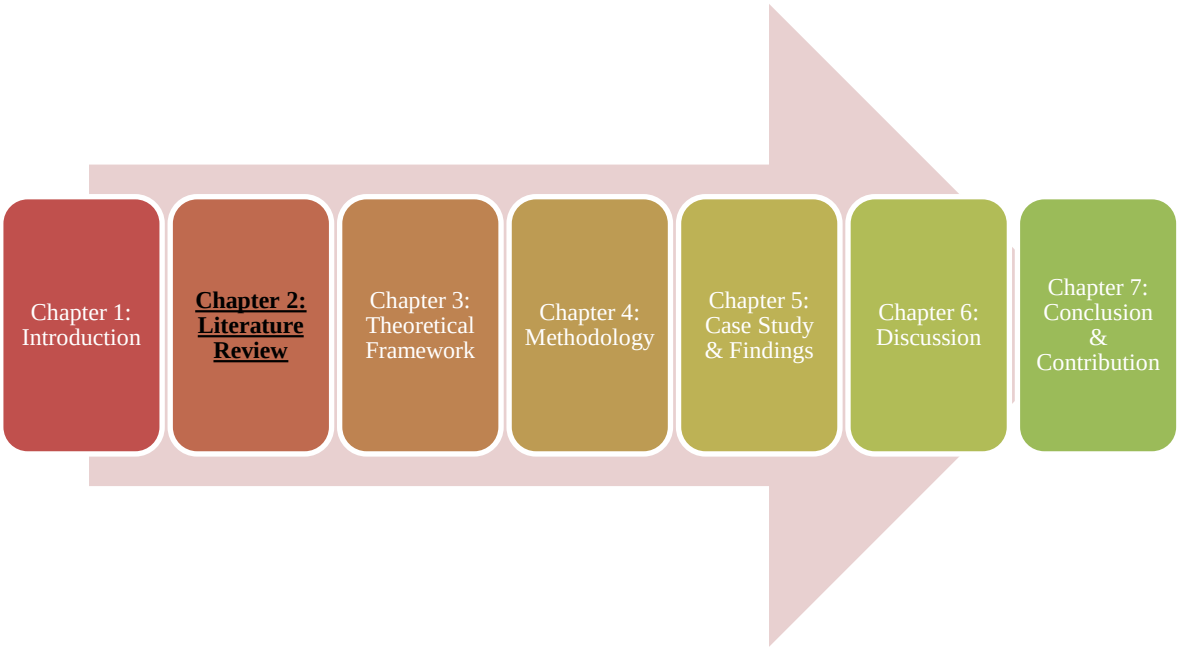


Figure 1.4: Overview of the thesis structure

1.10 Summary of this chapter

This chapter introduces an overview of the current research. It outlines the background of the present study and identifies the aim and objectives. It also presents the research questions and the significance and purpose of the research. Following the research rationale, a brief overview of the contribution to knowledge is presented. An overview of the researcher's background and motivation is also discussed. Finally, this chapter outlines the structure of the thesis. The following chapter presents an overview of the literature considered for as part of this research.

CHAPTER TWO


Chapter 1: Introduction
Chapter 2: Literature Review
Chapter 3: Theoretical Framework
Chapter 4: Methodology
Chapter 5: Case Study & Findings
Chapter 6: Discussion
Chapter 7: Conclusion & Contribution

2. LITERATURE REVIEW

2.1 Outline of the chapter

This chapter presents an overview of previous research on definition of Critical Success Factors (CFS). It reviews the published literature that investigate the success factors of IS projects together with the factors that influence their outcomes.

The bulk of the chapter critically evaluates the different methodologies used in this field to identify the most appropriate approach for investigating the research objective. This chapter helps understand practices, philosophies and theories related to CFS in IS projects.

This chapter also reviews three dominant models/frameworks addressing the factors affecting IS project outcome. It introduces adopted framework for the case study and comprises the main focus of the research described in this thesis. Then it discusses in more detail McLeod and MacDonell's framework adopted in this study.

2.2 Critical success factors (CSF) of IS projects

2.2.1 IS and IT: definition and differences

Information Systems (IS) and Information Technology (IT) are two closely related fields of study that are confusing to differentiate between and are often considered synonymous. However, in reality IT could be more accurately defined as a subset of IS. The perception that these two terms can be used interchangeably could cause confusion for scholars conducting technology-related studies. IT is primarily regarded as a paradigm consisting of a set of hardware and software platforms, including networks, operating systems and data retrieval approaches that are used to organise, manage and control data. IS, on the other hand, generally relate to process control, transaction processing, communication, and managerial decision support within organisations (Bocij, Greasley, and Hickie, 2008).

Based on the role of information systems, particularly in the academic sectors, the research presented in this section identifies and analyses crucial factors that influence the application of IS projects in Kuwait. The study primarily focuses on the educational sector as it is one of the most rapidly increasing and evolving sectors in the State. In investigate their success, this section critically analyses various reported factors in the literature.

Quoting Lee (2005) distinguishes between these terminologies by stating that:

> "*The terms 'information', 'systems' and 'information systems' have fallen into such careless use that they seemingly no longer denote anything different from one another. In the same way, 'information' has come to be used interchangeably with 'data' and 'knowledge', while 'systems' has almost always come to denote computer systems. And 'information systems' can mean the same as 'information technology', where both terms sometimes simply designate 'the computer'. Such usage trivializes and obscures the rich ideas that these terms originally signified.*" (Lee, 2005, p. 10)

In keeping with this practice, the terms IS and IT are used interchangeably throughout this study with an emphasis on IS for its wider meaning.

2.2.2 Critical success factors definitions and nomenclature

This section lists a number of specialist terminologies related to CSFs in information management as reported in the literature. Given below is a list of relevant definitions in the IS domain with a particular focus on enterprise systems in the education system:

2.2.2.1 Influential factors

The majority of influential factors in the literature focus on the institutional context covering projects-, processes- and user-related factors. These factors are directly attributed to the following core processes:

- **Project Management (PM)**: IS project design and implementation is organised and planned during its entire lifecycle (Jaafari and Manivong, 1998). In enterprise information systems management, the activity helps managers track projects from their conception to execution (Braglia and Frosolini, 2014).

- **Training and Education (TED)**: Training and education of company IT/IS staff members contributes substantially to how change is integrated in an organisation moving from older to newer system (Yngström, 1996). According to Ram, *et al*., (2014), TED of staff members is crucial in system integration activities particularly when the staff is already familiar with a legacy IS infrastructure.

- **Business Process Re-engineering (BPR)**: BPR is a process used to overhaul and calibrate the existing IS management activities during and after the implementation of an IS. This generally includes the re-organisation and/or re-installation of critical technology and management architectures (Peppard, 1996; Ram *et al*., 2014).

- **System Integration (SI)**: The terminology is defined as the process involving the absorption, exclusion, reorganisation and transfer of newer IT/IS infrastructure with the existing operational elements (Mohammadi and Mukhtar, 2013; Solotruk and Krištofič, 1980).

- **Implementation (IMP)**: The process is regarded as the application of design architecture of an IS to a set of mutually inclusive technical elements forming a working information management platform (Černá, 2014).

2.2.2.2 Success factors

The concept of "*Success Factors*", first introduced by D. Ronald Daniel in 1961 (Daniel, 1961), was later refined and made popular by Jack F. Rockart in 1979, who discussed a new approach developed by a research team at MIT's Sloan School of Management. Termed the "*Critical Success Factor*" (CSF) method (Rockart, 1979).

Daniel (1961) proposed the principle of identifying CSF as a basis for determining the information needs of managers as an inter-disciplinary approach with a potential usefulness in the practice of evaluation within library and information units. Over time, many academics have applied the methodology increasingly outside educational establishments. The theory suggests that, in any organisation there are certain factors that will be critical to the success of that organisation and its projects, in the sense that, if objectives associated with these factors are not achieved, the organisation will possibly fail.

According to Atkinson (1999), a project is deemed to be successful if it delivers the objectives stated for the project: is delivered on time, within the cost estimates and to the expected quality, if it is profitable for the contractor and if necessary it is terminated early.

The overall success of ERP IS implementation can be attributed to a wide range of factors covered in the entire system development lifecycle (Salini and Kanmani, 2012). In the literature, success factors are presented to include the following factors:

- **Operational factors**: The operational risks in an IS project SDLC are generally reported to originate from under-reported financial costs (Benaroch, Chernobai, and Goldstein, 2012), poor knowledge-acquisition and reported measures undertaken (Hora and Klassen, 2013).

- **Technical factors:** On the technical aspects, the success factors are predominantly associated with the extent to which the underlying system is capable of generating quality assurance such as programming faults and other implementation defects (Arinze and Sylla, 1990; Cho *et al*., 2013; Elghobary and Kabil, 1987; Gorla and Lin, 2010).

2.2.2.3 Failure factors

Failure factors can include IS attributes related to various technological and management aspects of the system. Herz *et al*. (2013) report a set of system evaluation criteria used to initiate effective monitoring and continued assessment of IT systems in

multi-faceted IS environments. Robust access to back-end database is also deemed crucial for efficient storage, organisation and access of company data (Kangsabanik *et al.*, 2007). In ERP system implementation, additional factors reported in the literature include organisation change failures (Wen-Hsien *et al*., 2010; Zhiyong *et al*. 2011), post-implementation client requirement assessment failure (Jamshidi *et al*., 2014), scope-creep and weaker management training (Chen *et al*. 2009), over-reliance on outsourcing (Chauhan *et al*. 2012), and inappropriate "critical success factor" analysis (Cheng, Deng, and Li, 2006; Liu and Liu, 2012).

2.2.3 Enterprise Resource Planning (ERP) system

Enterprise resource planning (ERP) system is a business process management software, which normally includes a suite of integrated applications. It allows organisations to use a system of multiple integrated applications to manage their business and automate a large number of office functions related to technology, services and human resources (Shields, 2004).

Organisations typically use ERP systems to collect, store, manage and interpret data from many business activities. ERP system integrates all facets of a business operation, including: product planning and purchasing, development, manufacturing or service delivery, sales and marketing, inventory management, shipping and payment, and many others. The implementation of an ERP system is not done in small steps. ERP systems often require dedicated IT teams to install the system, customise and analyse the data (data integration), and to handle upgrades and deployment (elaborate application) (Shields, 2004, p.9-10).

Theoretically, ERP systems are based on industry best practice, which means they reflect vendors' interpretation of the most effective way to perform business processes. ERP vendors encourage that organisations install the system as is. However, they do offer customers configuration (customisation) options that let organisations incorporate their own business rules. Customisation feature gaps often remain even after configuration is complete (Monk and Wagner, 2012; Vilpola, 2008).

2.2.4 Critical success factors in IS project implementation

As a definition, Rockart (1979, p.85) states that for any organisation; "*Critical success factors thus are, for any business, the limited number of areas in which results, if they are satisfactory, will ensure successful competitive performance*". In a later paper, Rockart (1982, p.4) clarified this definition by stating that "*Critical success factors are the few key areas of activity in which favorable results are absolutely necessary for a particular manager to reach his or her goals"*. Thus, CSF could be defined as the key areas in which good performance is necessary to support and ensure the attainment of organisational goals. Goals represent the end points that an organisation hopes to reach.

The CSF as a management approach attempts to make explicit those few key areas that dictate success (Boynton and Zmud, 1984). Based on the baseline work into the various classification schemes holding crucial influences on software systems development and deployment, the overall scope of CSFs can be divided into four major categories/variables of system failure factors, back measures against these failures, model for user participation and management change and risk factor models in ERP system implementations. These four factors are predominantly covered in McLeod and MacDonell's (2011) work by Lyytinen and Hirschheim (1987), Poulymenakou and Holmes (1996), Butler and Fitzgerald (2001) and Scott and Vessey (2002) respectively. This section presents a current overview of a further 16 factors identified by these authors in the current research context.

2.2.4.1 Factors influencing system failure

System failure in enterprise information systems may occur during any of the various stages of an IS System Development Life Cycle (SDLC) from the inception and design stage to implementation, testing, deployment and maintenance stages. Conventionally, "IS projects" tend to fail due to lack of robust design and implementation measures and inefficient test plans (Beynon-Davies, 1999; Pan *et al*., 2008; Rajnoha *et al*., 2014). Moreover, high software coupling, low cohesion software metric measures implemented during the technical implementation also play a major role in IS failures (Briand *et al*., 2000; Radjenović *et al*., 2013).

2.2.4.2 Backup framework variables affecting IS failures

The technical and operational features of such system failures must be identified, recorded and mitigated and may include data identification, collection and organisation and the subsequent perspectives, actions and events that resulted in the failure (Davis *et al*., 1992). The information system variables for failure prevention are mainly focussed on covering data collection, evaluation, knowledge acquisition and presentation levels (Alzoabi *et al*., 2013).

2.2.4.3 User participation and change management in systems development

Developing, delivering and managing an IS must be undertaken by suitably qualified staff. IS managers must particularly be trained in technical as well as business management skills to facilitate communication with the board members as well as the support staff (Bossen *et al*., 2013). The idea of change management via IS infrastructure is investigated by (Bröchner and Badenfelt, 2011; Huysman, 2000; Yen *et al*. 2008; and Huh, 1998). The areas predominantly cover issues of technical documentation, alternative staff learning and retaining. However, based on the predominantly contractual nature of Kuwaiti work culture, staff retaining must be put at the forefront to promote staff integration.

2.2.4.4 Risk factor models in ERP system implementations

The majority of risks in the implementation of medium-to-large-scale ERP systems focus on technological interdependence (Aloini *et al*., 2012b), technical implementation (Aloini *et al*., 2007), user participation (Matende and Ogao, 2013), critical failure factors (Amid *et al*., 2012), and quantitative risk mitigation (Aloini *et al*., 2012a).

2.2.5 Critical success factors studies in IS projects

A study by Chen, (2012) investigated 293 staff members of organisations belonging to various government sectors. The CSF criteria set in this study was based on external technical environmental factors, organisational policy and various management factors. The study predominantly pointed system quality, information quality, individual

impacts, organisation-level impacts, use satisfaction and usability to have the most crucial role in IS project implementation. The work was further extended as a qualitative and quantitative study and further pointed vendor technology levels an absolute control of executive, management and decision-level support to have substantial roles in IS project CSFs (Chen and Lin, 2012).

An IS project implementation in CISCO which aimed at the objective of cost saving via manufacturing and sales cost minimisation. The process involved the merger of another company Xiao Tong and integrated critical IT operations such as ERP systems at phase 1, staff system integration at phase 2 and process order management and accounting systems at phase 3. The reported CSFs that drove this IS implementation and merger were cited to be revenue improvement, improved operational and management aspects, cross-organisational collaboration, inter-organisational integration, inter-organisational business process re-engineering, technological improvement, management of ongoing legacy systems and establishment of shared industrial standards (Lu *et al*., 2006).

Over similar scales, information systems have been implemented in a wide range of organisational setups with similar levels of success based on the CSF discussed in this section. Ten CFS were selected by (Bradley, 2008) for an accountancy-based ERP system. Recent integrations in the academic health sector were reported by (Motahar *et al*., 2013) which emphasized more on an open-source framework.

A detailed analysis of various CSFs affecting various technical and management functions of organisations is presented in table 2.1.

Table 2.1: A set of critical success factors in projects reported in literature

Management/technical functions	Critical Success Factor (s)	Citation
Staff training and team management	• Project evaluation following staff training • Hiring of business analysts capable of abridging management to technical expertise • Technical skills evaluation of teams • Selection of management staff • Selection of consultants for knowledge gap fulfilment	(Fortune & White 2006) (Dubelaar, Sohal, & Savic, 2005) (Shih, Liu, Jones, & Lin, 2010) (Mackelprang, Jayaram, & Xu, 2012)
Executive and board-level leading	• Engagement of top-management • Sharing values with staff members • ERP prioritisation • Employee reward setup	(Ram, Corkindale, & Wu, 2013)
IS project planning and management	• Developing business justification plan • Establishing reporting criteria • Workload allocation, time and cost analysis and budgeting	(Sun, Yazdani, & Overend, 2005)
IS organisation	• Allocation of full-time management staff • Team-member-to-skill allocation	(Nah *et al*. 2001; Bingi *et al*. 1999; Sumner *et al*.1999)

At executive and board-level, Ram, Corkindale, and Wu, (2013) identified four CSFs and their effect on organisation performance. These CSFs include project management (PM), training and education (TED), business process reengineering (BPR) and system integration (SI). The CSF framework can also be used to identify and build an understanding of how CSF actually improves the overall project outcome by improving schedule, cost and achievement levels of various project sub-modules (Sun, Yazdani and Overend, 2005). For instance, for a university-level enterprise management system of a fee scheduling, timetabling and resource allocation system, a major achievement could be the minimisation of course scheduling conflicts, ease-of-use by students in paying their dues and improved budgeting outcomes.

2.2.6 Criticism of critical success factors research

To-date, the majority of IS research has focussed on the implementation of design principles, system reliability improvement and cost-benefit-analysis studies. There is a major gap in information systems research with regard to micro-contingent variables given in McLeod and MacDnell (2011) by Poulymenakou and Holmes (1996). Moreover, organisations generally fail to precisely match their requirements with the enterprise system being implemented, which results in increased operational costs (Anaya, 2013). The risk evaluation process given in McLeod and Macdonell (2011) by Scott and Vessey (2002) can further be materialised via elaborate risk-assessment registers defining the degree of importance of various risks in the contexts of demand, human resources, software, management, transformation and benefit risks. A similar risk management strategy is proposed in (Xue *et al*. 2011). On the user requirement gathering side, a wide range of tools has been developed to profoundly capture client requirements (Belfo, 2012; Sen and Kerschberg, 1987; Shen *et al*. 2004; Soffer *et al*. 2005). However, the majority of these tools are aimed at skilled professionals and management-level staff cannot use them for IS requirement input. As discussed previously, Buttler and Fitzgerals (2001) in McLeod and MacDonell (2011) further indicated change management principles that covered institutional, project and process-related factors.

2.3 Review some of the classical models and frameworks of CSFs of IS projects

The importance and ubiquity of IS projects in today's society and the waste of resources that results from the failure of IS projects, there is a significant interest in modelling success factors for IS projects (Petter *et al.*, 2008). This interest is reflected in the vast amount of work dedicated to investigating the factors that determine success or failure for IS projects, as several models and frameworks have been proposed (such as DeLone and McLean, 2003, 1992; Fitzgerald, 1998; Hallikainen and Chen, 2005; King and Lyytinen, 2006; Lyytinen and Robey, 1999; Poulymenakou and Holmes, 1996; Scott and Vessey, 2002) and more than 300 studies have been conducted to

evaluate and improve just one of those models over a 10-year period from 1992 to 2002 (DeLone and McLean, 2003).

Due to the above, reviewing this impressive body of work is a difficult task and one that can be successfully accomplished only when a very precise focus is chosen and maintained. Given the needs of this research project, the focus chosen is on three of the most prominent success factor models and frameworks that reflect quite different approaches to the task of investigating the potential success or failure of a given ISD project. The following three sections discuss and review the DeLone and McLean model (DeLone and McLean, 2003), the Risk Factors model (Scott and Vessey, 2002) and the McLeod and MacDonell model (McLeod and MacDonell, 2011). Each section gives a brief overview of the corresponding model and then provides a discussion of its main strengths and weaknesses.

2.3.1 Delone and McLean model

The DeLone and McLean model was first proposed in 1992 (DeLone and McLean, 1992) and later refined in 2002 and 2003 (DeLone and McLean, 2002, 2003). The model started as a taxonomy designed to organise and integrate the various studies of what contributes to, or otherwise influences the success of an IS project. Drawing from a large number of such studies, DeLone and McLean identified six distinct aspects of IS success: system quality, use, information quality, user satisfaction, individual impact and organisational impact (DeLone and McLean, 1992). According to the DeLone and McLean model, these six aspects are interrelated as shown in Figure 2.1 and contribute together to the success (or failure) of an IS project.

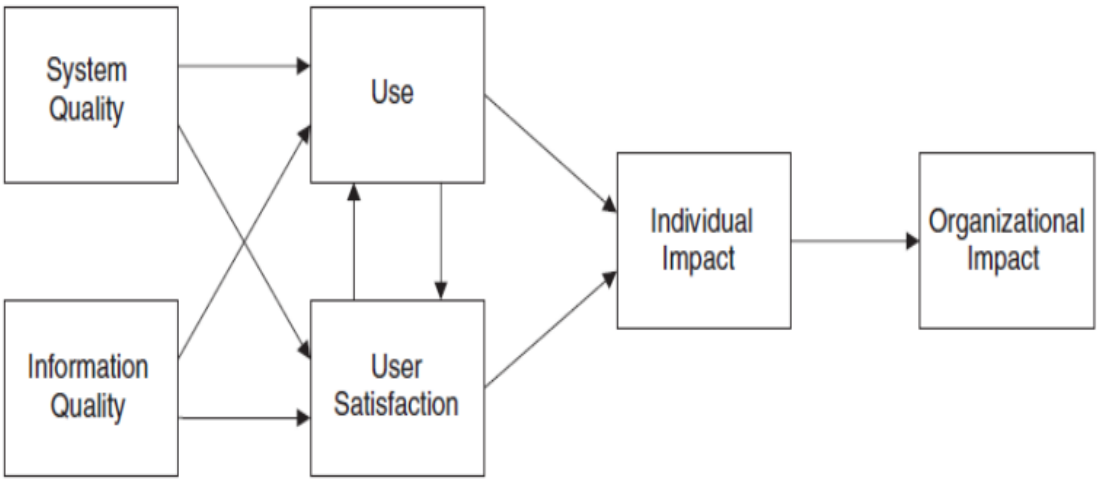


Figure 2.1: The DeLone and McLean model for IS project success (adapted from DeLone and McLean, 1992, p.87)

This initial version of the DeLone and McLean model was not without criticism, despite quickly becoming extremely popular. For instance, several studies investigated the DeLone and McLean model and reported that it failed to take into account important aspects of IS project success, or it did not fully address the needs of evaluating IS project success in specific situations (Ballantine *et al.*, 1996; Hu, 2003; Seddon and Kiew, 1994, 1994).

Answering the criticism, DeLone and McLean updated their model and proposed a new version that builds on the extensive evaluations of the model performed by the research community for ten years since the initial model was first published (DeLone and McLean, 2003). The main change in the updated model is a reorganisation of the quality aspects in order to account for new types of IS, such as e-commerce systems. More precisely, the individual impact and organisational impact aspects from the first version of the model are grouped together as the net benefits construct. Moreover, the intention to use, and the service quality, have been added as new aspects. Thus, the updated DeLone and McLean model has the following six interrelated constructs: system quality, information, service quality, intention to use, user satisfaction and net benefits (DeLone and McLean, 2003). A graphical representation of the updated DeLone and McLean model is shown in figure 2.2.

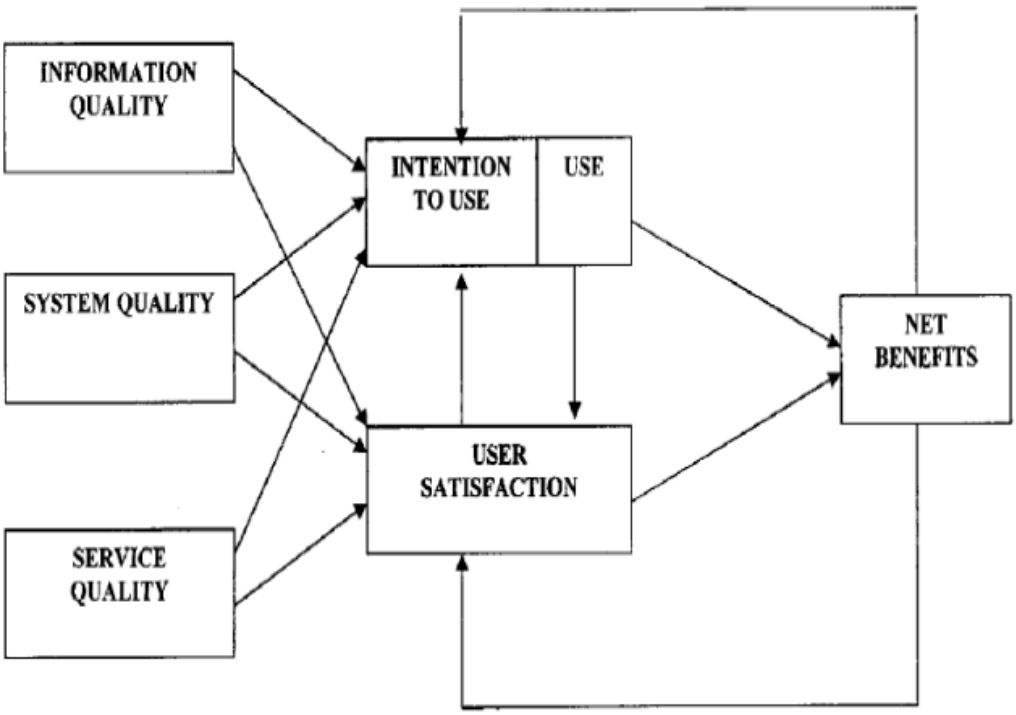


Figure 2.2: Updated DeLone and McLean model for IS projects' success (adapted from DeLone and McLean, 2003, p.24)

Similar to the first version of the DeLone and McLean model, the updated version also takes into account the fact that the different constructs considered (such as service quality and user satisfaction) are not independent or completely separated in practice (DeLone and McLean, 2003). Instead, all constructs are interrelated and the main relationships are captured in the model through the links shown between constructs. Thus, the updated model states that an IS project has three main quality characteristics (service, system and information quality) that that affect user satisfaction and intention to use, as well as indirectly through those, the net benefits obtained from the use of the system. In turn, the benefits of use as well as the user satisfaction and intention to use the system are all directly linked to the actual success of the IS project. Thus, the DeLone and McLean model provides a framework for linking quality attributes of the IS project to its success.

2.3.1.1 Strengths of the DeLone and McLean model

More than 10 years from its initial description, the DeLone and McLean model remains one of the most prominent works on identifying the success factors for IS projects, as reflected in the fact that the original description of the model has the highest number of citations in the field (Lowry *et al.*, 2007). Many of these citations come from works that either apply the model in various environments (Rai *et al.*, 2002) or further refine and improve or criticise it (Ballantine *et al.*, 1996; Seddon and Kiew, 1994; Seddon, 1997). Thus, the evidence points to this model as highly successful and mature at the same time. These are two important strengths of the model, as maturity and a high rate of success mean that the model has been already tested extensively and it has been validated as it repeatedly proved useful in a variety of situations and environments.

The success and longevity of the DeLone and McLean model are at least partially due to another important strength of the model, namely its simplicity. As it can be seen in Figure 2.1, the model is quite straightforward and has a neat structure of only six aspects (this small number of aspects remains the same in the updated version of the model, despite name changes to some aspects. By grouping all success factors into such few and tight categories, the DeLone and McLean model offers a convenient and easy-to-use as well as easy-to-understand framework for investigating or evaluating IS projects (Urbach *et al.*, 2009).

As an additional strength that follows from its simplicity, the model is also flexible to some extent, as each type of factor can be given a different weight depending on the specific needs of a given scenario. However, this flexibility is often not sufficient for specific types of projects, and in such cases, the model has to be extended or otherwise modified rather than used as it is. For instance, Urbach *et al.* attempt to use the DeLone and McLean model to investigate the success of IS projects related to employee portals, but find that the model fails to offer an adequate category for two of the crucial factors in this context, namely process quality and collaboration quality (Urbach *et al.*, 2010). Similarly, Wixom and Watson find that the DeLone and McLean model does not offer the necessary categories for a data warehouse context, and thus adapt the model by

using different constructs such as technical implementation success and organisational project success (Wixom and Watson, 2001).

Summarising the above paragraphs, the main strengths of the DeLone and McLean model are its simplicity, longevity and flexibility. These strengths suggest that the DeLone and McLean model is a very powerful, mature and valid model of the factors for IS projects success. However, as the flexibility of the model is often achieved in practice by effectively changing parts of the model itself, it follows that the DeLone and McLean model is not necessarily the best choice in all cases. Moreover, this is further supported by the fact that, despite its strengths, the DeLone and McLean model also has its own weaknesses, as described in the next section.

2.3.1.2 Weaknesses of the DeLone and McLean model

Arguably, the main weakness of the DeLone and McLean model is its very narrow focus on the quality characteristics of an IS project and actual benefits or use as sole factors affecting the success. Part of this weakness was exposed repeatedly for the first version of the model by studies that attempted to implement the model in specific contexts and found that the model was lacking and had to be improved upon in order to allow the researchers to take into consideration additional factors that were relevant to the success of the IS project in that specific context. Examples of such studies include that of Ballantine *et al.* (1996) and Seddon (1997) or Seddon and Kiew (1994). Although the updated version of the model addresses some of these issues to some extent, it still offers a limited number of different factors that can be considered, namely quality aspects (service, system and information quality), use aspects (intention of use and user satisfaction) and obtained benefits of use (net benefits) (DeLone and McLean, 2003).

The extent to which the above weakness affects the suitability of the DeLone and McLean model for a given IS project depends on the context and goal of the IS. For some projects, the quality characteristics may be the most important predictors of success and, consequently, the DeLone and McLean model can provide a very useful and adequate framework for the investigation. However, for other projects, additional

factors specific to the context might have to be taken into account and in such cases, the DeLone and McLean model might not be the best choice.

2.3.2 Risk Factors model of Scott and Vessey

The Risk Factors model is much more recent than the DeLone and McLean model, being proposed in 2002, as a practical and effective approach to investigating the causes of success or failures for IS projects in industrial settings (Scott and Vessey, 2002). In contrast to the DeLone and McLean model, the Risk Factors model has a much wider focus, taking into account not only the IS and its characteristics, but also the environment and context in which the IS is to be developed and/or used. Moreover, as the name of the model suggests, the approach taken is quite the opposite of that proposed by the DeLone and McLean model: rather than focusing on the aspects that correlate with success, the Risk Factors model focuses on the potential risks, namely the aspects that can cause the system to fail.

The Risk Factors model is built on the underlying assumption that the adoption or development of a new IS project always causes significant changes in the organisation and even in the users that interact with the system (Scott and Vessey, 2002). Consequently, the success or failure of an IS project is directly linked to whether the required change happens successfully or not, and whether it fits the users' needs of the system and those of the larger context and environment in which the system is developed and deployed (Scott and Vessey, 2002). Based on this assumption, the Risk Factors model is built as a layered structure with the IS project at its centre and then, in order, the following four layers: project and change management, information systems context, organisational context and external business context (Scott and Vessey, 2002). A diagram depicting the structure of the Risk Factors model is shown in figure 2.3. Moreover, the relationships between the different factors in the Risk Factors model are shown in figure 2.4.

As it can be seen from figure 2.3 and figure 2.4, the Risk Factors model takes into consideration a much wider set of factors than the DeLone and McLean model: in

addition to characteristics of the project itself, the model includes several layers of characteristics of the context, ranging from immediate context such as project management to organisational context and even external business context (Scott and Vessey, 2002).

The different layers in the Risk Factors model range from strategic characteristics (outer layers) to tactical characteristics (inner layers) from a business perspective. This distinction is important, as it helps inform the type and strength of the influence that each layer may have on the final success or failure of the IS project. For instance, the authors of the model note that strategic factors such as those in the outer layer of external business context are likely to impact profoundly the required implementation of the IS project, although on an infrequent basis, while tactical factors such as those associated with project management, are likely to have a less profound but more frequently manifested impact (Scott and Vessey, 2002).

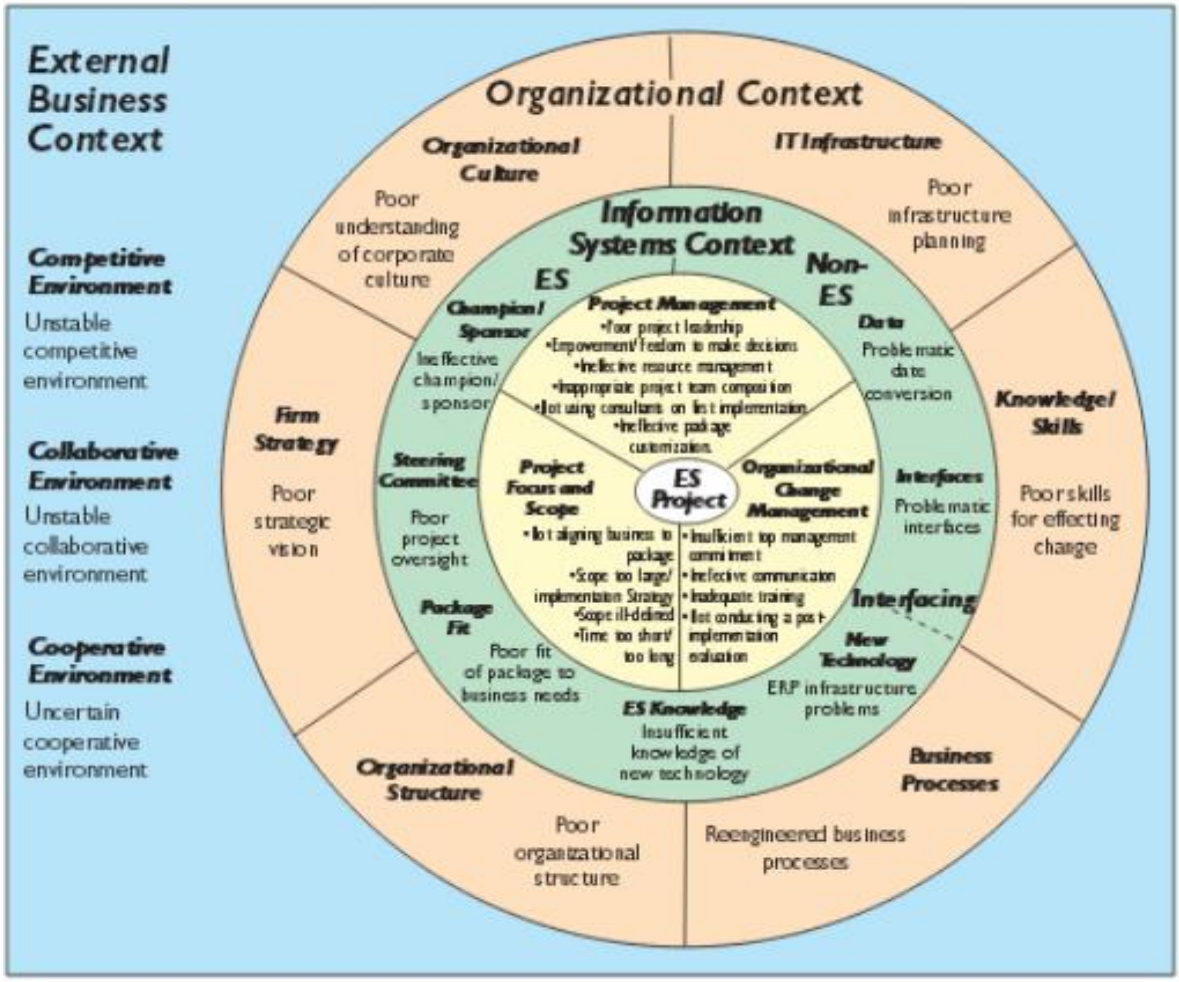


Figure 2.3: Structure of the Risk Factors model (adapted from Scott and Vessey, 2002, p.75)

An important aspect of the Risk Factors model is that it provides a framework for how the different factors that influence the success or failure of an IS project interact, as well as valuable guidance with respect to the type of factors that are likely to be relevant for a given context. For instance, the factors in the external business context are likely to be relevant only for IS projects developed or deployed either in very competitive environments in which change at this level is very frequent, or in cases of prolonged implementation or adoption of an IS project which can result in changes at this level, even when the external business context is otherwise collaborative or even cooperative and thus less predisposed to sudden and frequent changes.

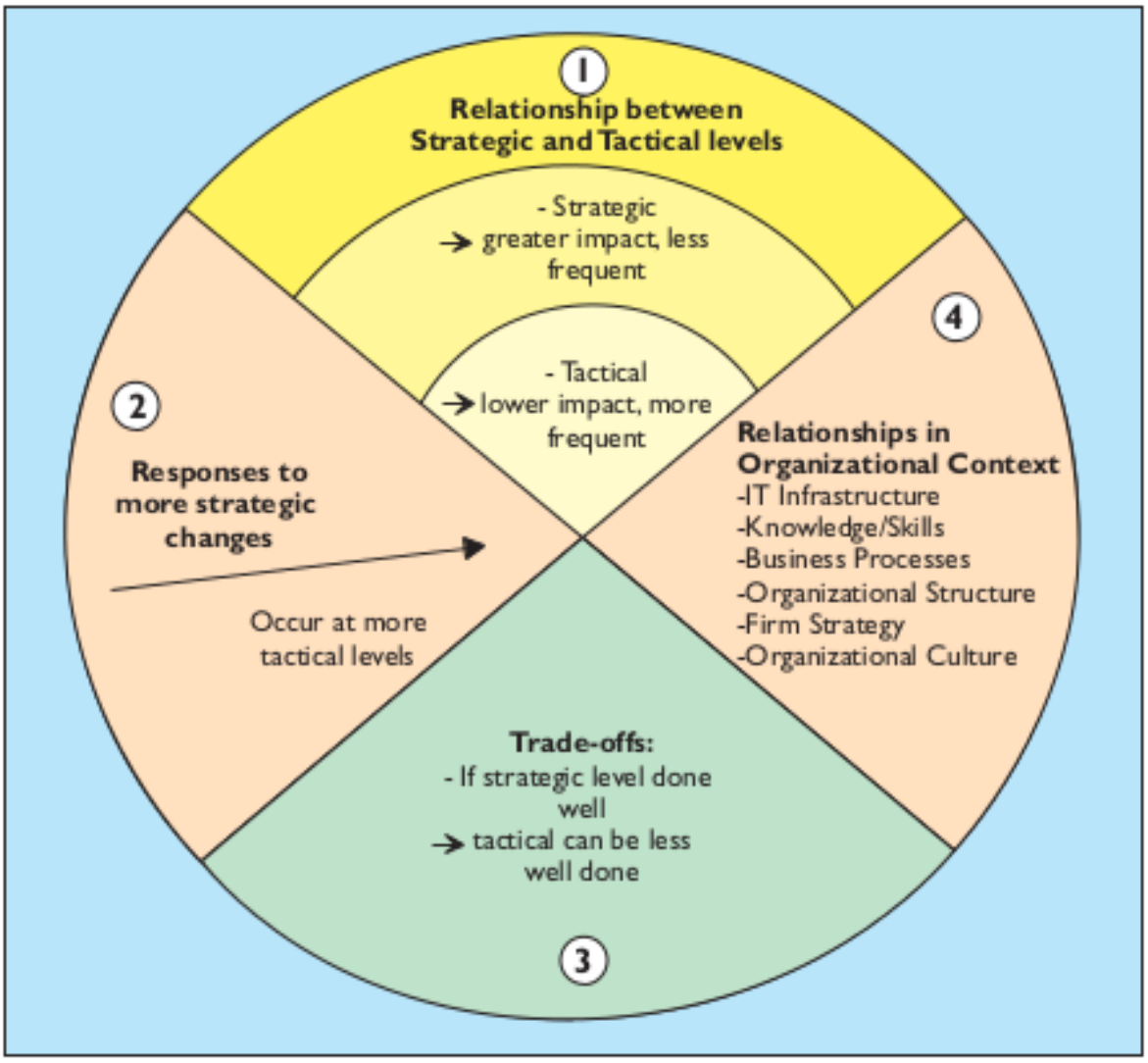


Figure 2.4: Relationships between factors in the Risk Factors model (adapted from Scott and Vessey, 2002, p.75)

Another aspect of the Risk Factors model is that it provides the means to investigate the ways in which different factors potentially compensate for one another, so that the IS project can still be successful, even when some factors are not ideal (Scott and Vessey, 2002). For instance, the interrelationships schema shown in Figure 2.4 shows that mistakes on the tactical level may not necessarily translate into a failure of the IS project, provided that the strategic level is sufficiently strong to drive the IS project towards success. However, this kind of relationship also works in the opposite

direction, so that IS projects that are perfectly executed on a tactical level can still fail when mistakes at the strategic level are too numerous or too costly.

Overall, the main crucial difference between the Risk Factors model and the DeLone and McLean model is the underlying assumption that each of them has: the DeLone and McLean model assumes that the success or failure of an IS project depends exclusively on the quality aspects (including usefulness) of the project itself, while the Risk Factors model assumes that at least in some cases, the success or failure is determined by management aspects rather than project aspects. As such, the Risk Factors model is more inclusive than the DeLone and McLean model, offering a wider perspective and more flexibility with respect to the type of factors considered and the investigation performed.

2.3.2.1 Strengths of the Risk Factors model

The main strength of the Risk Factors model is its wide focus and comprehensiveness: instead of focusing narrowly on the IS project itself, the Risk Factors model also considers the context of the project in quite rich detail and on several layers, ranging from management and organisational aspects to external business environment (Scott and Vessey, 2002). This strength is especially important for cases in which the context of the IS project is very important and can even determine the project's success or failure.

Another significant strength of the Risk Factors model is its flexibility stemming from the layered structure proposed. Depending on the concrete needs of a given investigation and IS project, one or several of the layers can be ignored, so that, for instance, the external business context may be ignored in cases where that context is not relevant for the outcome of the IS project due to either the timeframe of the project or the characteristics of the context. Moreover, each layer consists of several different categories of factors, so that each investigation can choose only those categories that are relevant.

Finally, a third strength of the Risk Factors model is the fact that it effectively captures not only the various factors that may affect the outcome of an IS project, but also the

ways in which distinct factors can cancel or otherwise compensate one another. As previously mentioned, an example in this sense is the potentially stronger impact of management factors that can compensate for the negative impact of some implementation factors, resulting in the overall success of the IS project (Scott and Vessey, 2002).

2.3.2.2 Weaknesses of the Risk Factors model

Despite the strengths set out above, the Risk Factors model also has several weaknesses that can make it a poor choice for some specific investigations of the success of IS projects. The main weakness that is easily visible is the specific focus of the Risk Factors model on IS projects for the business environment. This influences the types of factors considered (such as business processes and external process context) as well as the actual structure of the model and the weights associated with the interrelationships between the different layers of the model. While this specific focus can arguably make the model more effective for investigating IS projects in business environments, it also makes the model less general and thus less adequate for other types of environments, such as academic or governmental.

Another weakness of the Risk Factors model is its specific focus on ES (Enterprise Systems). Just as the focus on business environments reduced the generality of the model and hence its effectiveness in other environments, the focus on ES reduces the generality of the model with respect to types of IS projects. More precisely, the Risk Factors model is specifically designed to reflect the dynamics of ES projects, but such dynamics may be quite different for radically different types of projects such as academic, governmental or research projects. Consequently, for investigations of the success factors for such projects, a different model may be a better choice.

2.3.3 McLeod and MacDonell's framework

The McLeod and MacDonell's framework has both a theoretical and an empirical basis. On the theoretical part, the framework draws from conceptual theories of IS

development as well as from theories modelling organisational changes (McLeod and MacDonell, 2011). On the empirical side, the framework is the outcome of an extensive review of empirical studies published in prestigious venues (McLeod and MacDonell, 2011). As a result, the framework aims to synthesise and combine the current understanding of IS development and the results of empirical observation of IS projects in practice. Moreover, the McLeod and MacDonell framework aims to offer the means to systematise existing knowledge, but also to perform an informed and systematic investigation of an IS project in practice (McLeod and MacDonell, 2011).

The overall structure of the framework is quite simple and consists in four main categories of factors that together and separately influence the outcomes of an IS project: project content, development processes, institutional context and people and action (McLeod and MacDonell, 2011). The diagram in figure 2.5 is an illustration of this structure.

The project content refers specifically to the characteristics of the IS project itself, such as goals, scope, size and resources (McLeod and MacDonell, 2011). By contrast, development processes focus on the activities performed for developing the system (McLeod and MacDonell, 2011). Such activities can include for instance analysis and design, requirements elicitation as well as specific development methodologies that are followed.

While the above two categories were directly concerned with the development of the IS, the institutional context focuses on the environment of the IS, namely the organisation in which the system is developed and the wider environment in which this organisation operates. Finally, the people and action category focuses on human factors, including characteristics of individuals and groups involved in the project (McLeod and MacDonell, 2011). Such characteristics are not limited to those describing the individuals and groups, but include also measures of interactions, actions and relationships that are relevant to the IS project.

As it can be seen in figure 2.5, the four categories of factors considered by the McLeod and MacDonell framework are not isolated, but interact with one another in quite

complex ways: the institutional context provides the outer layer, while the other three categories (project content, development processes and people and action) are closely interrelated (McLeod and MacDonell, 2011).

In addition to the interactions between categories of factors, the framework has another layer of complexity, as each category of factors is further divided into subcategories based on the most common types of factors relevant for each category. This subdivision adds more detail to the framework and makes it quite comprehensive. For instance, the people and action category contains the following subcategories, based on the most usual roles, entities and types of interaction involved in the development of an IS project: developers, users, top management, external agents, project team, social interaction (McLeod and MacDonell, 2011). Similarly, the project content category contains the following subcategories: project characteristics, project scope, goals and objectives, resources, technology (McLeod and MacDonell, 2011). All the categories and subcategories are discussed in more detail in section 2.4, which offers a detailed discussion of this framework.

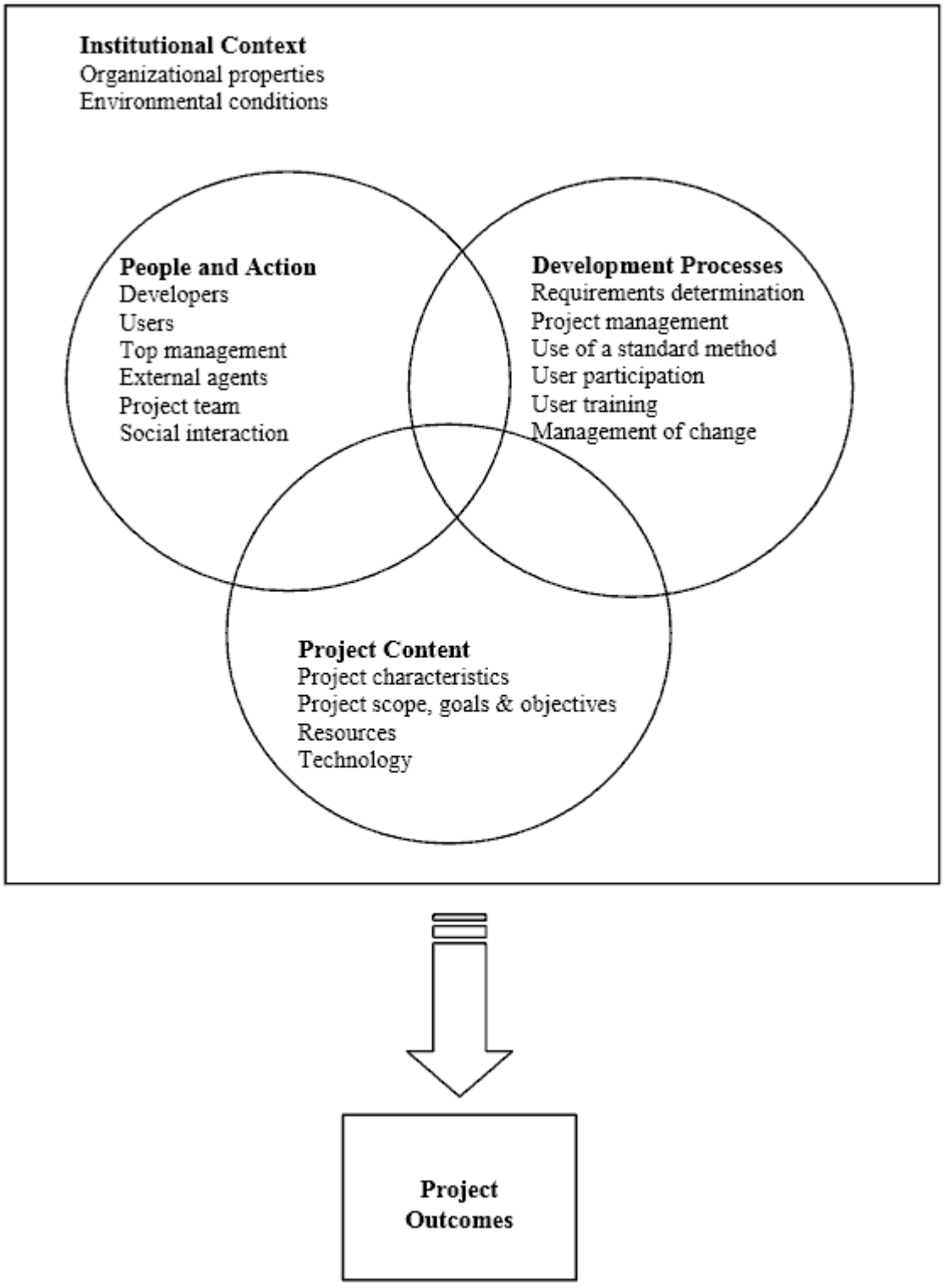


Figure 2.5: Diagram of the McLeod and MacDonell's framework for factors of IS success (adapted from McLeod and MacDonell, 2011, p.5)

2.3.3.1 Strengths of the McLeod and MacDonell's framework

The main strength of the McLeod and MacDonell's framework is its richness of detail combined with a simple but comprehensive structure. The overall structure shown in figure 2.5 is even simpler than that of the DeLone and McLean model (DeLone and McLean, 2002), as there are only 4 constructs (or 5 including project outcomes) as opposed to the 6 highly interrelated constructs of the DeLone and McLean model.

Despite this simplicity, the McLeod and MacDonell's framework succeeds in being more comprehensive than the DeLone and McLean model, as the 4 categories of factors model both the system and its context. Moreover, the subcategories provided for each type of factors add to the richness of the McLeod and MacDonell's framework, offering a concrete way to systematically investigate the potential outcomes of an IS project by taking into account all relevant factors (McLeod and MacDonell, 2011). Moreover, the framework explicitly considers not only IS characteristics (as the DeLone and McLean model does), but also the context of the IS project and the human factors involved.

An additional strength of the McLeod and MacDonell's framework is its flexibility: while the categories and subcategories of factors are quite clearly defined, there is flexibility with regards to the concrete measures or aspects chosen for each factor. Consequently, the framework can be adapted to the specific needs of a given project or environment.

2.3.3.2 Weaknesses of the McLeod and MacDonell's framework

The main weakness of the McLeod and MacDonell's framework is that it does not attempt to model in any detail the actual interrelationships between the various factors. Instead, the model simply states that the categories and subcategories of factors are interrelated, leaving it up to the user of the framework to decide what those relationships are exactly for a given IS project and how they affect the outcome.

In addition to the above, another potential weakness is that the framework provides only limited support for specific needs of IS projects in business environments. This is because the framework aims to be general rather than specific and thus provides the

structure on which business-specific factors can be considered, but it does not focus explicitly on them. Nevertheless, this is indeed a weakness only for cases when the framework is to be used for an IS project in a business environment. If instead the IS project has a different context (such as educational or governmental), this aspect of the framework does not constitute an actual weakness.

2.4 The McLeod and MacDonell's framework and its factors

As discussed in the previous section, the McLeod and MacDonell's framework provide a comprehensive model of factors that affect the outcome of an IS project. However, the categories and subcategories of factors in the framework have to be further refined into concrete measures and aspects that are to be taken into consideration for each factor. The following subsections discuss such concrete aspects, drawing on the results of existing work for each of the factors in the framework.

2.4.1 People and action

2.4.1.1 Developers

As the main professionals involved in the actual development of an IS, developers can influence certain characteristics of the final product and thus, potentially, the outcome of the whole project. However, there is no clear consensus as to what characteristics developers can influence to ensure the success of an IS project. For instance, several studies found that competency and good technical skills are important (Barry and Lang, 2003; Jiang *et al.*, 1996; Keil *et al.*, 2002). Moreover, developer experience, training and expertise were repeatedly found to contribute to an IS project's success (Aladwani, 2002a, 2002b, 2002c; Baddoo *et al.*, 2006; Fitzgerald, 1998; Wixom and Watson, 2001). One study summarised this factor as a need for "*skilled, experienced, and talented developers*" that would contribute to the success of an IS project through their ability to "*anticipate problems and innovate workable shortcuts*" (Baskerville and Pries-Heje, 2004).

2.4.1.2 Users

Existing literature suggests that there are three main ways in which users of an IS influence the outcome of the project: through their expectations, their ability to use the system and their attitudes and involvement with the system (McLeod and MacDonell, 2011).

User expectations of the information system can influence the outcome positively when they are correctly and adequately captured in the system's requirements (Aladwani, 2002a, 2002b, 2002c; Lemon *et al.*, 2002; Petter *et al.*, 2008; Somers and Nelson, 2001), but also negatively when that is not the case (Barry and Lang, 2003; Lyytinen and Hirschheim, 1987).

The users' ability to use the system and their general experience with it has a more subtle influence on the outcome, as existing studies note that experience has an indirect influences, by affecting mainly the users' attitude and involvement with the system (Barki and Hartwick, 1994; Mahmood *et al.*, 2000).

Users' attitude and involvement with the system are sometimes harder to evaluate, but constitute nevertheless important factors that influence the outcome of the project. Involved users with a positive attitude towards the system have a positive impact on the outcome, while detached users or users with a negative attitude can precipitate failure (Amoako-Gyampah and White,1997; Keil *et al.*, 2002; Mahmood *et al.*, 2000). However, an important aspect to note here is that the negative impact is often more clear than the positive one, as a negative attitude can easily lead to the failure of an otherwise useful IS, but no amount of positive attitude can change the negative outcome of an IS that lacks the required functionality or features (Mahmood *et al.*, 2000). Moreover, the attitude itself is often influenced by users' background, including experience, abilities and skills (Mahmood *et al.*, 2000).

2.4.1.3 Top management

The management can often have a more profound impact on the outcome of an IS project than the actual developers (Scott and Vessey, 2002). While the framework does

not clearly define what are the roles included in the top management, existing studies tend to consider them to include "*senior executives and decision makers with responsibility for the overall strategic direction of the organization*" (McLeod and MacDonell, 2011). The main characteristics of top management that are repeatedly associated with IS project success include support and understanding of the project, as well as commitment (Jiang and Klein, 2000; Jiang *et al.*, 2000; Kappelman *et al.*, 2006; Keil *et al.*, 1998).

2.4.1.4 External agents

External agents are relevant for projects which are not developed entirely by a single organisation. Examples of external agents include external consultants and contractors (McLeod and MacDonell, 2011). The impact of external agents on the outcome of the project depends of course on what their contribution is precisely (Kappelman *et al.*, 2006; Ranganathana and Kannabiran, 2004). However, in general terms, the studies found that the main risk factors arise from a breakdown of communication between external agents and internal people involved in the process as well as from the tendency of external agents to focus on the technical part and ignore the social aspects of the project (Sarkkinen and Karsten, 2005).

2.4.1.5 Project team

The reason for considering the project team separately is that such a separate construct includes not only the individuals involved, but also their relationships and interactions. Some of the main characteristics of the project team reported to influence the outcome of IS projects are the size and degree of collaboration achieved inside the team, as well as the collective expertise of the team (Aladwani, 2002a, 2002b, 2002c; Jiang *et al.*, 2000; Ranganathana and Kannabiran, 2004; Wixom and Watson, 2001).

2.4.1.6 Social interaction

While part of the social interaction is captured in constructs such as the project team, this specific construct aims to account for all the other facets of social interaction that are relevant to the outcome of the IS project. Examples include the communication

between different groups of stakeholders, organisational culture, the potential existence of social groups that do not necessarily reflect professional or stakeholder groups, and the interaction between all those that are part of the project. The social interaction aspect has been repeatedly shown to be correlated with the success of an IS project, as effective communication, mutual understanding and collaboration are required for a positive outcome (Aladwani, 2002a, 2002b, 2002c; Amoako-Gyampah and White, 1997).

2.4.2 Project content

2.4.2.1 Project characteristics

Project characteristics refer to concrete aspects of the IS project itself, such as size and complexity. Empirical evidence suggests that size, complexity, task interdependence and novelty are all characteristics that have a direct negative impact on the outcome of the project (Barry and Lang, 2003; Jiang and Klein, 2000).

2.4.2.2 Project scope, goals and objectives

This construct is included in the framework due to the fact that several characteristics of a project's scope, goals and objectives have been repeatedly shown to influence the outcome of the project (McLeod and MacDonell, 2011). For instance, goals have to be realistic, clear and well-defined in order for a project to be successful (Aladwani, 2002a, 2002b, 2002c; Jiang *et al.*, 1996; Somers and Nelson, 2001). At the same time, unclear goals, frequent changes of goals or mismatched objectives can lead to the project's failure (Barry and Lang, 2003; Keil *et al.*, 2002; Lyytinen and Hirschheim, 1987).

2.4.2.3 Resources

The resources available to a project can decide its outcome, especially in a negative way, meaning that insufficient resources often lead to a failure of the project, although the inverse is not true, as sometimes projects fail despite having had sufficient resources (Barry and Lang, 2003; Fitzgerald, 1998; Jiang *et al.*, 1996; Keil *et al.*, 2002; Wixom

and Watson, 2001). There are three main types of resources relevant to IS projects, namely: financial, time and human resources (McLeod and MacDonell, 2011). Perhaps an important point to make here is that the impact is most often due to how effectively the resources are allocated rather than whether or not they are available in generally for the project.

2.4.2.4 Technology

Technology factors include software and hardware aspects both at the time of development of the IS and at the time of deployment. Similarly to the resources factor, the issue here is about whether available technology is effectively and efficiently used for a given project, rather than whether it is available (McLeod and MacDonell, 2011). For instance, effective development tools were found to increase the chances of project success (Aladwani, 2002b; Jiang *et al.*, 2000; Somers and Nelson, 2001; Wixom and Watson, 2001).

2.4.3 Development process

2.4.3.1 Requirements determination

Requirements determination is the first stage of the development process and it is crucial to the success of the project (Hooks and Farry, 2000). Well-defined, correct, realistic and clearly stated requirements are associated with successful IS projects (Lemon *et al.*, 2002). By contrast, ill-defined, incorrect, incomplete, unrealistic or unclear requirements are likely to lead to the failure of the whole project (Barry and Lang, 2003; Kappelman *et al.*, 2006; Keil *et al.*, 1998; Wixom and Watson, 2001).

2.4.3.2 Project management

The project management construct refers to the "*planning, organizing, and managing organizational resources, both financial and human, for the duration of a project*" (McLeod and MacDonell, 2011). Empirical evidence points to the complexity of project management for IS projects and its important impact on the outcome (Aladwani, 2002c; Jiang *et al.*, 1996; Lemon *et al.*, 2002).

2.4.3.3 Use of standard method

The use of standard methods is an approach to limit the effects of complexity by relying on previously tested solutions. In the case of IS projects, standard methods refer to the use of development methods, procedures and principles, usually grouped together under a common name, such as Agile Methods (Cockburn, 2006), Iterative Development (Larman and Basili, 2003; Larman, 2004) or Waterfall Development (Sommerville, 2011).

2.4.3.4 User participation

User participation in the development process can take various forms and it is not entirely clear which of those forms or indeed if any of them have a significant positive impact on the outcome of the IS project. Empirical evidence is rather contradictory, with some studies reporting that user participation has a positive impact on the outcome of a project, while other studies reported inconclusive results (Lemon *et al.*, 2002; Mahmood *et al.*, 2000; Wixom and Watson, 2001).

2.4.3.5 User training

Several studies report that user training can have a positive impact on the outcome of IS projects (Aladwani, 2002a, 2002b, 2002c; Cooke-Davies, 2002; Skok and Legge, 2002; Sumner, 1999; Sumner, 2000; Zhang *et al.*, 2003). However, the impact of user training is likely to be indirect, mainly as a result of the training addressing some issues with other factors such as users' attitude towards the system or users' abilities and involvement with the system.

2.4.3.6 Management of change

Change is considered a significant risk factor in the development of IS projects, to such degree that entire methodologies are built around the concept of either avoiding change (as is the case with the Waterfall methodology (Sommerville, 2011)) or anticipating and facilitating it as an inevitable part of software development (as is the case with Agile methods (Cockburn, 2006)). Consequently, the effectiveness of change management for an IS can make the difference between success and failure (Aladwani, 2002a; 2002b;

2002c; Cooke-Davies, 2002; Kappelman *et al.*, 2006; Lyytinen and Hirschheim, 1987; Riley and Smith, 1997; Sumner, 2000).

2.4.4 Institutional context

2.4.4.1 Organisational properties

The organisational properties construct captures the immediate context of the IS project development, including aspects such as norms, rules, procedures, values and beliefs held or imposed in an organisation (McLeod and MacDonell, 2011). The impact of organisational properties can be quite subtle and depends on the exact properties considered. For instance, the culture within an organisation can either promote better communication that has a positive impact on the outcome of the project, or discourage communication and thus negatively impact the outcome (Gallivan and Keil, 2003). Moreover, even the size of an organisation can impact the outcome (Butler and Fitzgerald, 1997) and the structure of the organisation can determine the availability of resources and the effectiveness of their allocation (Bussen and Myers, 1997).

2.4.4.2 Environmental conditions

The environmental conditions reflect the wider context within which the organisation itself functions (McLeod and MacDonell, 2011). Thus, environmental conditions can influence the requirements for the success of the IS project, but also the available resources or the frequency and importance of changes that are made to the requirements (Bussen and Myers, 1997; McLeod and MacDonell, 2011).

2.4.5 The interrelationships between factors in the framework

From the detailed description of the various factors in the previous sections, it becomes quite clear that most of them are interrelated in quite complex ways. Despite this complexity, there are however some clear types of interrelationships. For instance, institutional context factors are the most general and provide the overall context of the project, exercising a subtle influence on all the other factors. By contrast, project content and development process are more directly linked and the project content

should normally directly influence the choice of the development process. Finally, the people and action construct is likely to influence both the project content and the development process, due to the fact that people are at the very heart of the development of any IS project.

2.5 Rationale of the McLeod and MacDonell's framework

Due to the above, reviewing this impressive body of work is a difficult task and one that can be successfully accomplished only when a very precise focus is chosen and maintained. Given the needs of this research project, the focus chosen is on three of the most prominent success factor models and frameworks that reflect quite different approaches to the task of investigating the potential success or failure of a given IS project.

The rationale for considering and reviewing the DeLone and McLean's model (2003), the Scott and Vessey's model (2002), and the McLeod and MacDonell's framework (2011) as possible candidate models for conducting this research was due to their characteristics that makes them fit with the current research and for their maturity and extreme esteem as it has been seen in the literature, whether theoretically and empirically, which

As motioned in the previous section, the strength and weakness points of each model was presented, see the summary in Figure 2.6. The three presented models feature many characteristics that make them, at a very close level, prominent success factor models and frameworks that reflect quite different approaches to the task of investigating the potential ISD projects success or failure. One may distinguish on a specific side; however, the overall characteristics of every model give each one an exclusive preference and value. DeLone and McLean's model and the Scott and Vessey's model, for example, show more maturity and longevity than McLeod and MacDonell framework, but the latter was distinguished for constructing the framework based on a heavy review of literature survey with both theoretical and empirical bases, 216 journal paper addressing this topic, over a ten-year period (1996 – 2006). The survey included

some papers conducted their studies based on DeLone and McLean and the Risk Factors perspectives. McLeod and MacDonell attempted to understand the different contributions offered by other scholars, include the positive characteristics, and avoid any major negative issues in order to build their framework, such as: simplicity, comprehensiveness, and flexibility. The framework provides a conceptualised and synthesised perspective of the types of factors that have been asserted as impacting ISD project's outcome.

The Scott and Vessey's model focuses on ERP systems explicitly and was found suitable for the business environment specifically, which do not fit with nature of the governmental HEI context. The DeLone and McLean's model had a long run successful rate; however, it narrows the focus on quality characteristics, offer a limited number of different factors, and typically need improvement for the HEI context. For the giving reasons, the two models were rejected and the framework of McLeod and MacDonell was found the best for conducting this research.

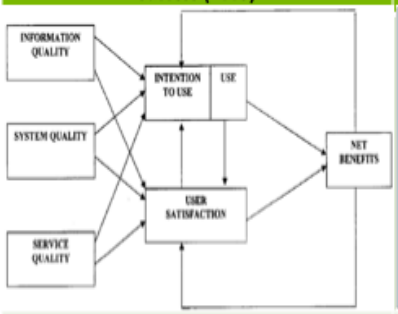
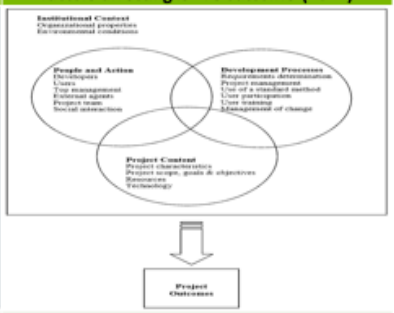
DeLone & McLean model for IS projects' success (2003)	Scott and Vessey Risk Factors model (2002)	McLeod & MacDonell's framework for factors affecting ISDPs outcome (2011)
		
Strengths: • Longevity: Mature model with highly successful rate. • Simple & straightforward: Easy-to-use, easy-to-understand. • Flexible to some extent.	***Strengths:*** • Wide focus & comprehensiveness: Focuses on the IS project and the project context in quite rich detail & on several layers. • Flexible. • Shows factors that may affect the IS project outcome & the ways in which distinct factors can cancel or otherwise compensate one another.	***Strengths:*** • Simple, but rich in detail. • Flexible to specific needs of project/context. • Subcategories offer systematic investigation of ISD projects' outcomes. • More comprehensive than other models. • Has both theoretical and empirical basis.
Weaknesses: • Narrow focus on the quality characteristics. • Need to be improved for specific contexts. • Offers a limited number of different factors.	***Weaknesses:*** • Focuses on IS projects for the business environment specifically. • Focuses on Enterprise Systems Explicitly.	***Weaknesses:*** • No attempts to model the actual interrelationships between the various factors, (i.e. What those relationships are exactly & how they affect the outcome). • It's more general than specific. It doesn't provide much support for specific needs of ISD projects in business environments. • Doesn't explain how the presented factors are affecting the outcome of the IS projects.

Figure (2.6): Summary of strengths and weaknesses of candidate models for this research

2.6 Summary of the chapter

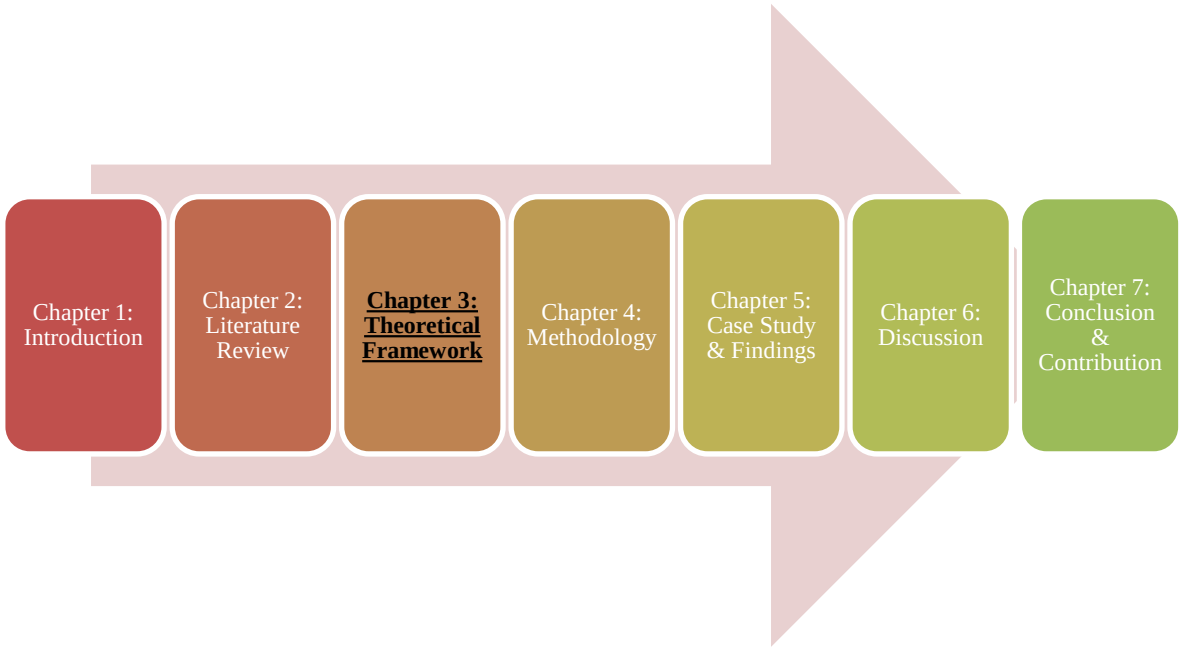
This chapter presents a detailed and critical assessment of the application of the CSF approach of information systems to large enterprise organisations. In the current backdrop of IS research, the focus has lately been on the cost and benefit aspects of system implementations. Particularly, in educational settings, with an ever-increasing student intake, the pressure on existing computing infrastructure has forced organisations to move to technologically-advanced IT/IS infrastructure that is difficult and cost-inefficient to maintain, thereby resulting in issues of outsourcing, over-staffing and lack of training. Therefore, in the Kuwaiti context, based on the existing IS research, development of a design architecture or IS implementation for Kuwait University as a case study is likely to offer outstanding potential by reducing uncertainties from project goals. Moreover, it will also improve the overall staff efficiency by means of better training opportunities. On the client side, the new model of enterprise-level IS implementation purpose-built for the Kuwaiti society will potentially improve the overall stakeholder requirement gathering process and the extent to which user feedback is forwarded to the managers. According to the four core CSFs described by McLeod and MacDonell (2011), this model can potentially be investigated to include attributes of system failures, backup variables supporting recovery, model for user participation and project management and ultimately an Enterprise risk modelling implementation strategy.

Much work has been done investigating the factors that impact the outcomes of IS projects. As a result, it became clear that there is no any single factor or group of factors that directly decide the outcome of IS projects, but there are instead complex interrelations between a large number of factors that affect the outcome of an IS project. Consequently, much of the research work has focused on developing and improving frameworks and models that can help guide investigations of success factors for concrete IS projects in specific environments.

As part of the literature review done for this research project, three of the most prominent frameworks and models were presented and discussed: the DeLone and McLean model (DeLone and McLean, 2003), the Risk Factors model (Scott and Vessey, 2002) and the McLeod and MacDonell's framework (McLeod and MacDonell, 2011). A comparison of these three models, combined with a discussion of the strengths and weaknesses of each of those resulted in the McLeod and MacDonell's model being chosen as most adequate for the purpose of this research project.

To prepare for the actual use of the chosen framework to investigate an existing IS project, each of the constructs of the framework has been discussed in detail, drawing on relevant results of existing research. Also, the interrelationships between factors were also discussed.

CHAPTER THREE



3. THEORETICAL FRAMEWORK

3.1 Outline of the chapter

As discussed in the previous chapter, the mentioned phenomenon of IS projects reveals two major sides. On one hand, the social sub-system where stakeholders of an organisation require relevant technologies. While on the other hand, there is a technical subsystem, which includes the technology adoption and its associated procedures and specifications.

This chapter discusses different theories that could help in breakthrough and find logical explanations of the phenomenon this research attempts to explore. The previous chapter, the literature review, covers mainly two significant fields, social and technical. Therefore, this chapter discusses two of the most cited and accepted Socio-Technical theories, the Actor-Network theory (ANT) and ETHICS.

3.2 The importance of a theoretical framework

Information systems projects in governmental organisations, nonetheless the governmental academic institutions, are increasingly challenged by a host of modern problems. These include environmental complexity, dynamism, different new technologies and competition that is able to exploit the weaknesses of an organisational paradigm.

As (Einstein, 1946) famously stated:

> "*A new type of thinking is essential if mankind is to survive and move toward higher levels.*"

In order to move to the higher level needed to solve any problem, one should break out of old patterns of thinking. Hence, deep understanding of underlying organisational structure is increasingly needed to be developed in order to systemically understand and address complex and uncertain phenomena.

The present research requires a critical method of thinking by which offer the ability to analyse the relationships between the factors of McLeod and MacDonell's framework during the implementation of the IS projects within KU context. Richmond (1994, p. 139), who first coined the term "***System Thinking***" in 1986, deduces the following definition:

> "*Systems Thinking is the art and science of making reliable inferences about behaviour by developing an increasingly deep understanding of underlying structure.*"

Senge (1990), defines systems thinking as a holistic approach that emphasises on understanding the whole rather than the dynamic structure of the system. He denoted the term as the fifth discipline, and it is a framework for seeing interrelationships and repeated events rather than objects, alongside seeing new styles and pattern styles of change rather than static and rigid "snapshots". This discipline is based on a set of principles, tools, and techniques that have been developed over the years. Sage (1995) describes this discipline "*is the catalyst and cornerstone of the learning organization that enables success through the other four dimensions*." (Sage, 1995, p. 407)

In order to tackle the questions of this research, there is a need to find an innovative "System Thinking" due to the complex nature of the phenomenon under study, which has been described in the previous chapters. There is a necessity to use a theoretical framework that fits the characteristics of the factors of the adopted framework in the present study and the interrelationship between them and the organisational characteristics of KU.

To our knowledge, there is a research gap on studying the CSFs in IS projects in governmental HEI within the Kuwaiti nor in similar Gulf contexts. This gap can be filled with generic models and frameworks, which the current research suggests McLeod and MacDonell's framework after considering multiple models. McLeod and MacDonell's framework, however, is more theoretical rather than operational. It lacks the practical underpinning that describes how its elements interact from the social and technical perspectives. The theoretical framework chapter provides different school of thoughts that could support McLeod and MacDonell's framework to overcome these

missing parts to make it a more comprehensive and profound model. This section sheds the light on two widely acknowledged Socio-Technical Theories (STT): the Actor Network Theory (ANT) and the ETHICS theory. The following section discusses the two theories and their basic concepts, strengths and weaknesses, their design principles and its contribution to the field of IS. In order to adopt a theoretical framework that best suits this study, it is important to pinpoint the characteristics of different theories.

3.3 The consideration of different Socio-technical theories

Socio-technical (STT) offers a set of concepts that help in the understanding "*how an organisation actually undertakes its work process*". It is an approach to design organizational systems that consider human, social and organizational factors, as well as technical factors. The theory offers methods for the design and implementation of new work systems.

The first socio-technical theory was shaped by researchers of the Tavistock Institute in London more than 60 years ago, to form a noteworthy leap forward in the configuration of organisations fit for individuals to work with. The pioneers at the Tavistock Institute believed that their research tasks ought to endeavour expand learning, as well as grasp the change of work circumstances that were unacceptable in human terms (Mumford, 2006, p. 318). This trend drove them to create a Socio-Technical approach. This implied paying equal consideration to the social/human and technical/technology factors. Lamb, Sawyer, and Kling (2000, p. 1614), stress that "*ICTs do not exist in social or technological isolation*".

The social/human factors put emphasis on providing high quality and satisfying workplace for the employees. While the technical/technology factors, of both machines and the related work association, which, in their opinion, should not be the controlling factor during the implementation of any new systems (Mumford, 2006, p. 318).

3.3.1 Actor-Network theory (ANT)

Over the past 30 years, Michel Callon, Bruno Latour and John Law were the main three scholars that frequently been associated with ANT to describe their particular approach to scientific and technical innovation (Latour 1987; Latour 2005; Callon 1999; Callon and Law 1997; Neyland 2006). Those pioneers and other scholars have written a number of articles and books that attempt to summarise, clarify and critique ANT.

The term ANT is used by Latour and Woolgar (1979) to refer to a distinct collection of research studies in the field of science and technology in which the actions of the different stakeholders to create a set of facts that enhance the work system of achieving organisational goals. It is a method for joining innovation determinism and social constructivism giving option methods for taking the perspectives of both social and technical factors. The advantage of the ANT provides the option to explore relationships and contexts between man and technology, which is difficult in other approaches (Doolin and Lowe, 2002).

ANT is used in social sciences of technology to explain the ways in which technological innovations are integrated and constructed in society. It describes the interwoven relationship between the human and non-human factors within a social context in order to set up with the different actors (Latour and Wolgan, 1986). ANT is a conceptual framework, also known as "*Enrolment Theory*" or "*the Sociology of Translation*", which explores collective social and technical processes. It pays particular attention to science and technological activities stemming from the interest of science and technology studies. It elevates the status of scientific knowledge and counter to heroic accounts or innovation models as it suggests that there is no fundamental difference between the work of science and other social activities (Hassard, Law and Lee 1999).

ANT gives equal treatment for realism and culturally constructed values in producing knowledge. It also explains the process of heterogeneous engineering in which the social, technical, conceptual, and textual are juxtaposed and translated (Callon and Law 1997). What distinguishes ANT is that it encapsulates technology and the

implementation of the organisational aspects in a practical framework in which one would dominate the other (Misa, 1994; Scranton, 1994; Hughes, 1994; Orlikowski and Baroudi, 1991). Moreover, ANT provides an integration between social norms customs and new technology to an equal and symmetrical status with the human actors. Walsham (1997), states that this concept provides an insight in understanding the complex relationship between stakeholders and ERP systems in academic institutions.

Heeks and Stanforth (2015) argued that ANT helps investigate the formation and dissolution of socio-technical structures; understand the evolving role of technology; and translate the stakeholder interests, and values during these processes.

More recently, Hsbollah, Simon and Letch (2016) further emphasised that ANT has been heavily adopted in studying the IS for development purposes than to understand the IS governance and implementation within a developing context.

3.3.1.1 Why not ANT?

ANT has received its fair share of criticism. Bloor (1999) and Restivo (2010) state that ANT can only describe power structures. However, its vocabulary and analytical tools cannot challenge them. They even openly raised the question whether or not it should even be considered as a social theory at all. On similar ground, ANT has been criticised for ignoring some basic social factors such as gender, race, class, and post-colonialism (Walsham, 1997). By dismissing these basic elements of social science, ANT lacks the capability of challenging the power of the racism oligarchy (minority), patriarchy (chiefdom), or eurocentrism (nationalism), respectively.

As one of many anti-essentialist movements, ANT does not differentiate between science (knowledge) and technology (artefact). Similarly, proponents do not subscribe to the division between society and nature, truth and falsehood, agency and structure, context and content, human and nonhuman, micro-level phenomenon and macro-level phenomenon, or knowledge and power. Nature and society, subjectivity and structure, and fact and fiction are all effects of collective activity. ANT advances a relational materiality, the material extension of semiotics, which presupposes that all entities

achieve significance in relation to others. Science, then, is a network of heterogeneous elements realized within a set of diverse practices (Doolin and Lowe, 2002).

The main criticisms held regarding ANT, include: (1) the absurdity of assigning agency to nonhuman actors; (2) that ANT is amoral; (3) that because it assumes all actors are equal within the network, no accommodations for power imbalances can be made; and (4) that ANT leads to useless descriptions that seem pointless. *To what extend the EHTICS approach adds value to McLeod and MacDonell's model?* The answer to this question is presented in the next section.

3.3.2 *ETHICS*

Enid Mumford is an important and pioneer scholar of the Tavistock Institute who have adopted the STT in the last three decades, indicates that; "*Socio-technical systems design provides a new worldview of what constitutes quality of working life and humanism at work. It facilitates organizational innovation by recommending the removal of many elite groups and substituting flatter hierarchies, multiskilling and group decision-taking*" (Mumford, 2003, p. 262).

Mumford's ETHICS theory is an acronym for *Effective Technical and Human Implementation of Computer Systems*. ETHICS is an approach that has been developed over the past three decades. In contrast to most systems design methods, what distinguishes ETHICS is that user participation is fundamental at every stage.

The remarkable sense of ETHICS is that it forces the search for solutions that take into account 'social' as well as 'technical' aspects. The whole process of ETHICS can be considered as a method of balancing the costs and benefits of social and technical solutions upon job satisfaction and efficiency. The ETHICS theory of Mumford (1983), contains six stages that are as well divided into 25 steps (See Figure 3.1).

Mumford (2003) demonstrates that involving all the stakeholders in the design process, help designing better, and more vigorous and efficient systems. She linked

organisational success to the interest of the organisation towards the importance of both the technical and social aspects of the system equally. She also states the main goal of the STS theory is that; "*It wants to replace tight controls, bureaucracy and stress with an organization and technology that enhances human freedom, democracy and creativity*" (Mumford, 2003, p. 262).

The six phases of ETHICS approach are:

- *Stage 1 - (steps 1 to 11): Essential Systems analysis:*
  The preliminary stage of the ETHICS method involves the identification of the boundaries of the system the description of the current system. The key goals and missions of the suggested system should also be stated. The groups then rank the objectives set on a scale of one to five. It is important to note at this stage that the requirements for both efficiency and job satisfaction are initially contemplated separately before being consolidated. This stage is considered in Chapter 3 (Choice of IS projects) and Chapter 5 where we drew the boundaries between the internal context, and macro & meso-levels in the surrounding environment. It also describes the extent to which the current IS projects in Kuwait University are developed in terms of higher education strategic goals.

- *Stage 2 - (steps 12 to 20): Socio-technical systems design:*
  This stage encourages a reconciliation attempts between the social and technical aspects of the systems design. It identifies social and technical constraints, before allocating resources for the preferable social and technical options. The goals set in the previous stage are checked and revised for comparability before any decisions are taken and final step is completed. This stage have been considered in Chapter 5 and 6 where we demonstrate the process of IS project management and the interplay between the social and technical factors in Kuwait University.
- *Stage 3 - (steps 21 to 23): Setting out alternative solutions:*

The evaluation of alternative solutions for the technical or social subsystems is conducted at this stage, which are set out in a matrix form in order to assess the potential advantages and disadvantages, and the compatibility with the planned objectives. This stage is considered in Chapter 6, where we explain alternative socio-technical balances between the project contents, people & actions within the development process.

- *Stage 4 - (step 23): Setting out compatible solutions:*
  The short lists resulted from the previous stage are combined to decide which technical and social solutions are the most comprehensive, compatible and integrated. This stage is reflected in the discussion and comparison between project A and B in Kuwait University.

- *Stage 5 - (step 24): Ranking socio-technical solutions (step 24):*
  Technical and social solutions that found in the previous stage operate well together and merged into an evaluation matrix are ranked based on the information gained in the third stage. In this stage, all chosen socio-technical solutions should meet the criteria outlined in the first and second stages. In contrary to this approach, our theoretical framework has underpinning iterative ranking of the socio-technical solutions subject to the rule contingency.

- *Stage 6 - (step 25): Prepare a detailed work design (step 25):*
  This stage performs the implementation of all tasks related to socio-technical solution. These tasks should be described in detail and ranked in checklist in order to present a balanced spreadsheet of the skills required and the complexity of tasks. This stage is deeply reflected in our discussion of the tendering & purchasing procedures, choice of IS/IT package, regulatory issues, as well as managing the informal relationship to improve the acceptance of IS projects at a top policy making level (See Chapter 6).

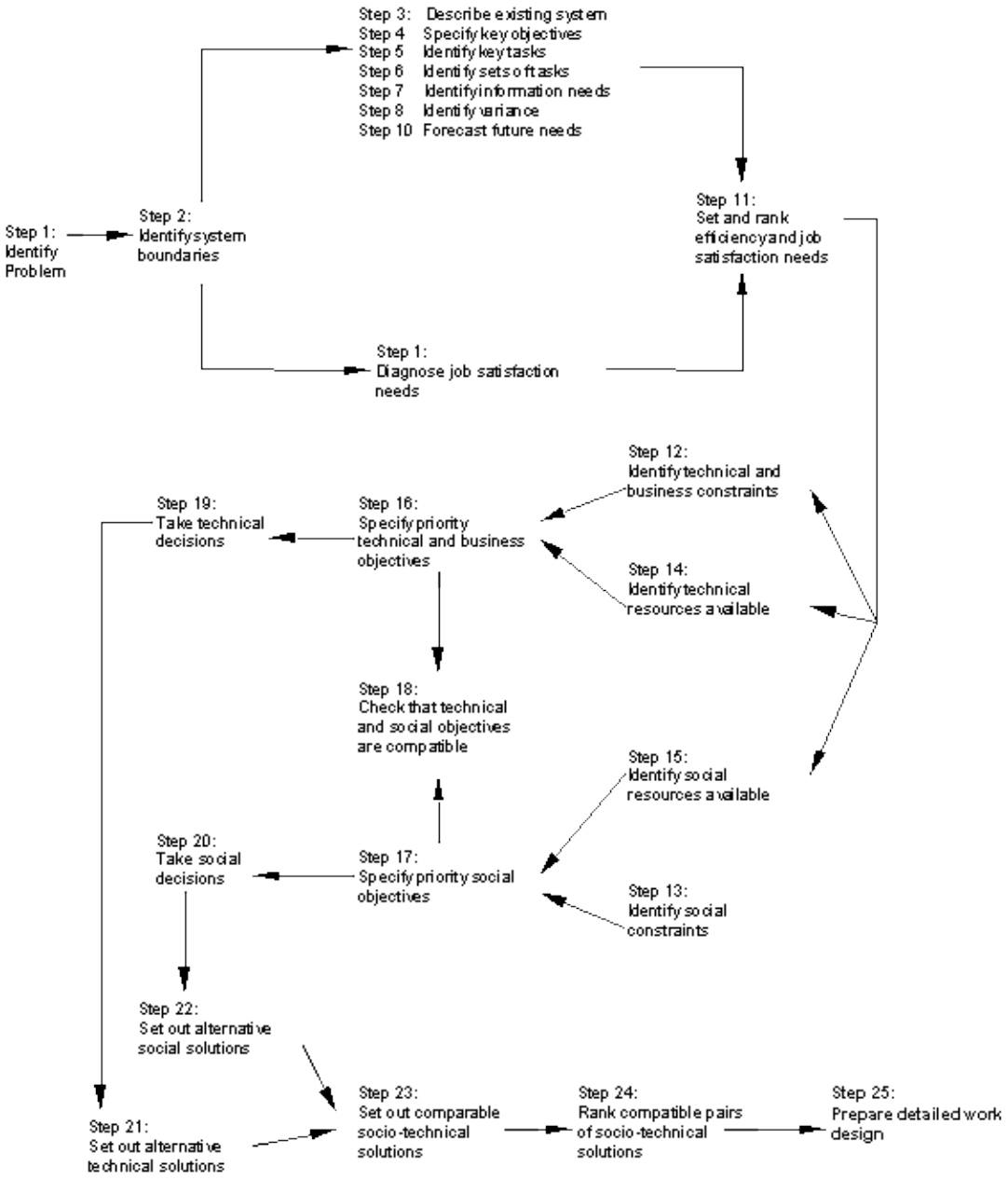


Figure 3.1: Stages of ETHICS theory (adapted from Hirschheim, Klein, & Lyytinen, 1995, p. 249).

3.3.2.1 Rationale of ETHICS

The approach of ETHICS is meant to imply that it is a methodology that embodies an ethical position in addition to its technical position from a managerial perspective.

ETHICS was as a methodology based on a participative approach to ISD projects (Mumford, 1995). It encompasses the social and technical perspectives to make the ISD implementation more effective and keen to fit the technology closely with the human aspects in the organisation. This means that users must be a major objective of the ISD process to improve the quality of working life and enhance job satisfaction. She has supported this view by the reference to the failure of many IS implementations, which were performed using traditional approaches, where their focus was based mainly on technical and economical considerations.

Unlike most of approaches, the philosophy of ETHICS is explicitly stated and explained, which is not so common in traditional ISD approaches. ETHICS philosophy evolves the organisational behaviour and it perceives the ISD process not as a technical issue, but as an organisational consideration, which is fundamentally concerned with the process of change.

This research adopts Mumford's socio-technical perspective, ETHICS, to conceptualise the implementation of ISD projects as a dynamic, multi-dimensional process, and get influenced by different critical factors. In which a project outcome emerges unpredictably from complex and reciprocal interactions, between people and technology within an organisational context.

In the same vein, Orlikowski (1992, p. 421) notes that technologies have different degrees of interpretive flexibility, that include "*... how people design, interpret, and use technology ...*", which he considers "*... is a function of the material components comprising the artefact, the institutional context in which a technology is developed and used, and the power, knowledge, and interests of human actors*".

A major philosophical aspect of the ETHICS approach is participation, which concerns about the involvement of the stakeholders of the ISD implementation as part of the decision-making process, including the direct and indirect users, particularly to what regards the design and operation of the system to a certain extent. For example, participation has been described as vital in ETHICS (Hirschheim, 1985); however, some stakeholders (like for example the competitors) are unlikely to be asked to

participate. In order to illustrate on the ETHICS approach, some traditional approaches may allow users to simply choose the colour of the interface that they use, while in ETHICS, users are involved in the decisions of more complex matters like the implementation processes and how the use of technology or system may enhance their job satisfaction.

Fok, *et al.* (1987) illustrates that "*the STS advocates suggest that the major reasons for these systems problems and failures are the faulty and inadequate assumptions imbedded in the traditional design methodologies*". After the analysis number of major schools of thought in IS development, Iivari (1991), concluded that it become a common sense to understand information systems as a technical artefact with social activities involvement; however, he asserted that these intellectual schools still do not have a clear role of human nature in the IS development. In support of this assertion, Wood-Harper, *et al.* (1996) stressed that approaches like the soft Systems Methodology, Multiview and ETHICS can help to "*integrate more of the human element into the problem study*" in order to fit the technology closely with the social and organisational structure.

3.4 A Socio-Technical McLeod and MacDonell

This section discusses a theoretical framework that incorporates the Socio-Technical System theory and McLeod and MacDonell's framework of factors affecting the outcome of IS projects. Based on this research aims and the questions to be studied, a theoretical framework has been developed to understand the process of IS project management within KU from a socio-technical perspective. It points out four sets of factors, which we aim to investigate and comprehend with regard to the role of the interrelationship between the social and technical subsystems. As demonstrated in the above discussion of the ETHICS approach, our theoretical framework impedes all 6-stages in the conceptual model of McLeod and MacDonell that is discussed in the previous chapter.

Every research study is based on a conceptual model or framework that identifies the variables of interest and the expected relationship between them, whether in an implicit or explicit manner (Bickman and Rog, 2009).

The ETHICS theory was found appropriate for this research because it is an approach that considers technical factors, as well as human, social and organisational factors in the design of organisational systems. Therefore, the proposed theoretical framework for the current research is utilised to explain the aim and objectives (as mentioned in Ch.1).

The development of the theoretical framework by the combination of the Socio-Technical System theory and McLeod and MacDonell's framework helps develop a holistic framework which has the features of simplicity and acceptability; and considers the humanitarian factors at the same time. The suggested theoretical framework has the key dimensions and critical factors that influence IS project outcomes, which are easy to attain information about and comprehend.

The four dimensions of McLeod and MacDonell's framework, in addition to the two key dimensions of ETHICS, make the combination very easy to use for the data analysis and provide authenticity to the findings. The combination of ETHICS approach and the framework of McLeod and MacDonell forms together an integrated and consolidated conceptual framework that helps meeting the requirements of this research, see Figure 3.2. This is the introduction of a new Theoretical Framework having both theoretical and practical applications.

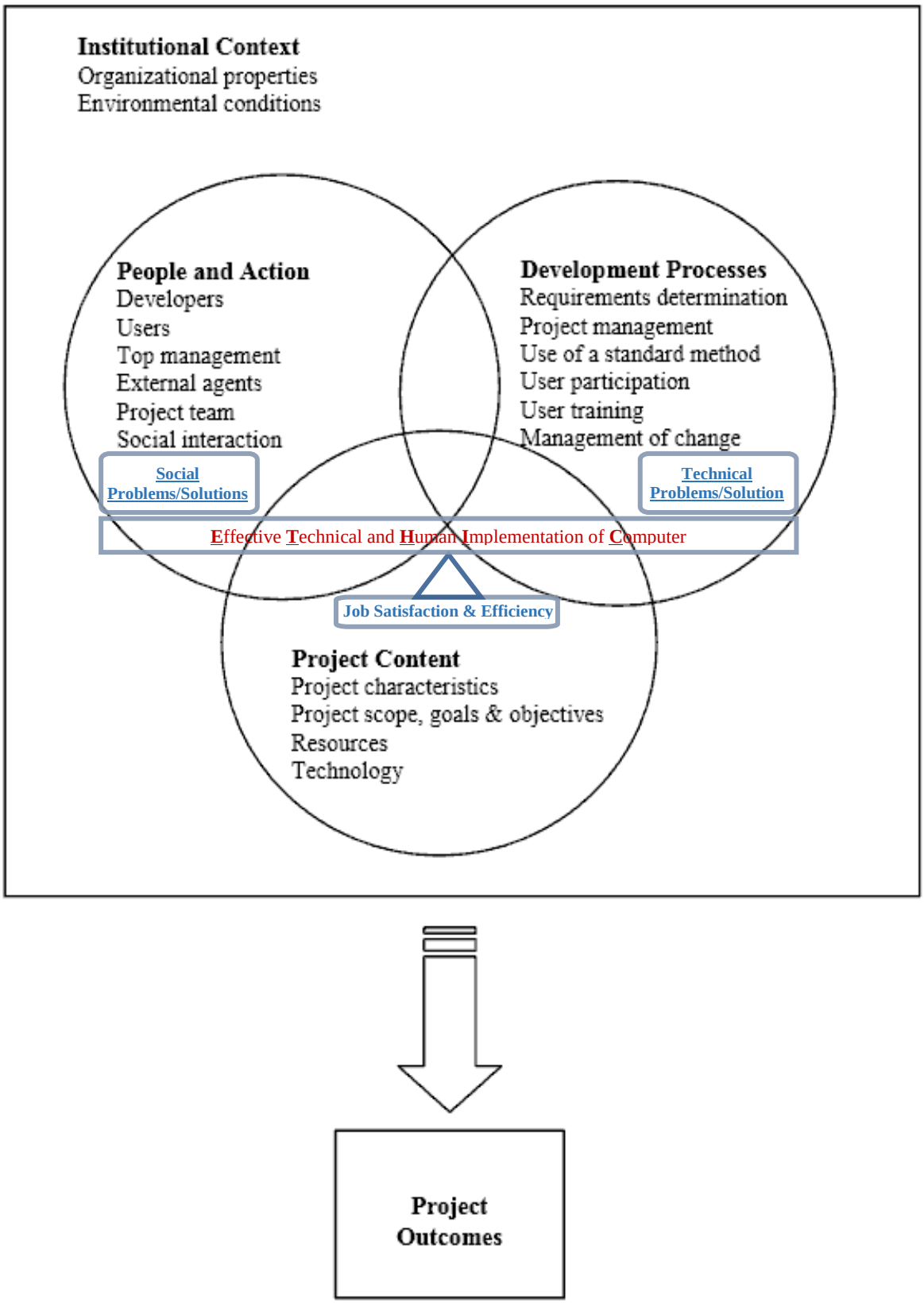


Figure 3.2: ETHICS McLeod and MacDonell framework

The research perspective of the combination of the ETHICS theory and McLeod and MacDonell's framework provides an in-depth understanding and profound insight of the different factors that affect the outcome of IS projects in a governmental HEI context from two different viewpoints, which other theories cannot do all on its own. The framework of McLeod and MacDonell has a comprehensive set of factors that affect the outcome of IS projects, which this research is investigating in an HEI context in Kuwait. However, this framework does not account thoroughly for perspectives of the social and technical subsystems, which are overcome by integrating it with ETHICS. This combination, i.e. the new conceptual framework, has assisted in answering the research questions and it has the flexibility to add new dimension to it without affecting its original design efficacy.

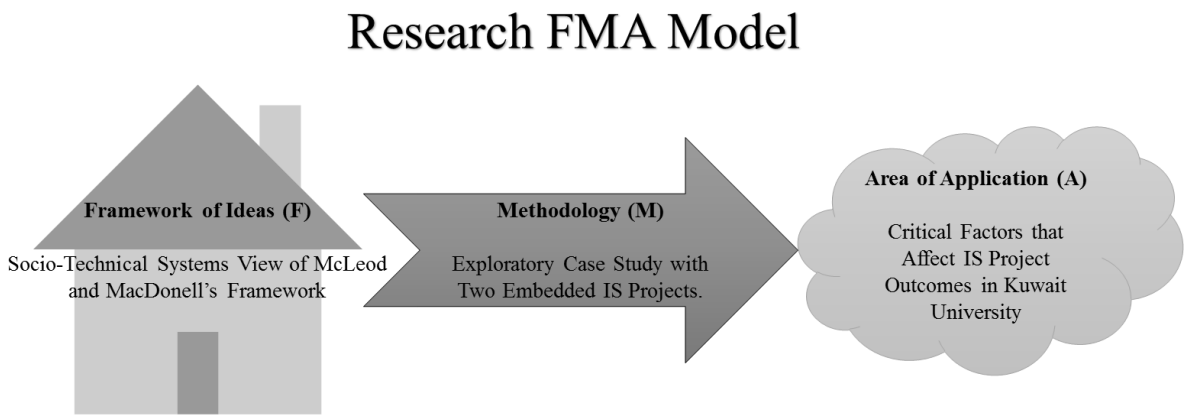
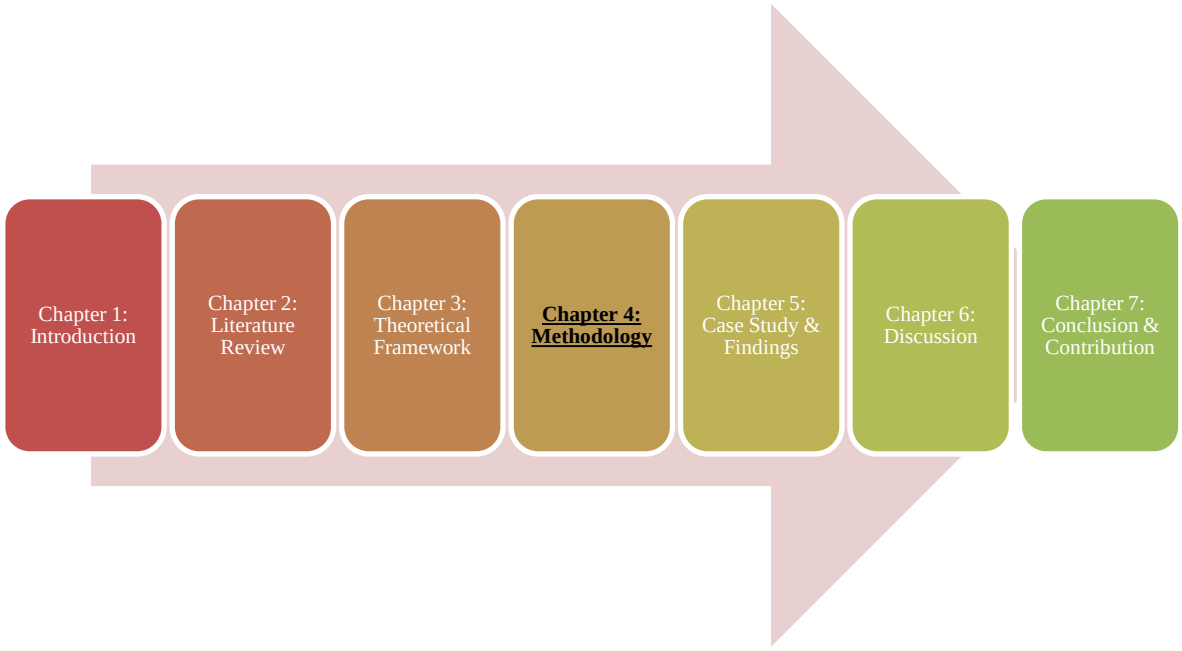


Figure 3.3: FMA model for the current research

3.5 Summary of the chapter

Chapter 3 presents literature pertinent to two widely accepted theories that explain the interrelationship between the social and technical subsystems in organisations. To sum up, this chapter proposes a technique for theorising McLeod and MacDonell framework to be used for the implementation of ISD projects. The suggested conceptual model was then related to the ETHICS sociotechnical approach and applied in our consideration of cases choice, sampling, case descriptions, and data analysis.

CHAPTER FOUR



4. RESEARCH METHODOLOGY

4.1 Outline of the chapter

The first two chapters provide detailed background and literature related to the study of the critical factors that affect the outcome of IS projects, as well as, the attempts of scholars to conceptualise those into models and frameworks. As stated in chapter one, this research aims to identify a framework of critical factors that influence the success/failure of IS projects from a socio-technical perspective. The research seeks to find out the CSFs that influence the outcome of these projects in governmental HEI in Kuwait (Kuwait University). Chapter three discusses the theoretical approach to how knowledge is obtained and processed.

This chapter illustrates the stages covered when developing a research strategy. It describes a detailed stage of the research process to have an effective progression through which an integrated research methodology can be designed. The usefulness of this chapter lies in its adaptability of the current research for the type of its contexts. Moreover, the present chapter discusses the methodology adopted to answer the questions of the research in order to achieve the main aim and objectives specified in the first chapter. The methodology is significant in portraying the overall track laid down for this research, as well as the various activities that this study undertakes in order to answer the problem of the research. The provision of an appropriate research methodology ensures that the study realises its objectives effectively and comprehensively.

First, the research philosophical paradigm must be defined. This sets a starting point for choosing the appropriate strategy adopted for this research in the second step. In the third step, the research strategy that fits within the chosen approach is adopted, and the fourth step identifies the strategical tools and methods required for the data collection and specifies time span and place as well.

Beginning with the philosophical idea or worldview of the investigation, this chapter provides a walkthrough of the considerations made for the study. For each component of the research process, the researcher outlines the possibilities and provides the

rationale for the choice. Nonetheless, the research techniques included interviews and surveys were used to meet this aim and to answer the key research questions. Combining these techniques helped to gain reliable and in-depth of information in order to achieve appropriate results. Smyth and Morris (2007, pp. 428) found that over 90% of authors do not make their research methodology clear. Therefore, discussion on the decisions made for key criteria including ethics, validity, and reliability is presented in this chapter to clarify the methodology. In the discussion are also the advantages and limitations of the research strategy.

4.2 Research philosophy

Brayman (2012) refers to the set of beliefs concerning the phenomena or the nature of the reality under investigation as a research philosophy. Research philosophy describes an underlying approach to the nature of knowledge. According to Flick (2011) the assumptions generated by a research philosophy provide the grounds for how the research is undertaken. Goddard and Melville, (2004) argue that research philosophies can differ on the research objectives and on the best strategy to be applied to achieve these objectives. These objectives are not necessarily at odds, but the decision of which research philosophy is chosen is determined by the type of knowledge being investigated in the research (May, 2011). Consequently, understanding the research philosophy can help explain the assumptions innate in the research process, and how it fits the methodology used in the research.

According to Saunders *et al*, (2007), research philosophy reflects how a researcher thinks about the development of knowledge and how the research should be conducted. Philosophical ideas influence research practice, and must be identified before embarking on a project. Also known as worldview, meaning a basic set of beliefs that guide either - an action, a paradigm, or epistemology and ontology- research philosophy sets the course for the investigation. Burrell and Morgan (1979) suggest that the nature of society and the nature of science are the main dimensions that the researcher should

consider prior to making their core assumptions when developing a research philosophy.

4.2.1 Ontology

Ontology is the branch of metaphysics philosophy related to the overall nature of "*What things are*?". In the most general terms, ontology is concerned with identifying the nature of things that actually exist in reality. In other words, ontology is a theory about the nature of being or things that exist.

Effingham (2013) explains that ontologists are not interested in the existence of old things, but examine question about what things there are. Things could be categorised as abstract or concrete things. Numbers, properties, possibilities, facts, or propositions are abstract things, while concrete things can be perceived with the senses.

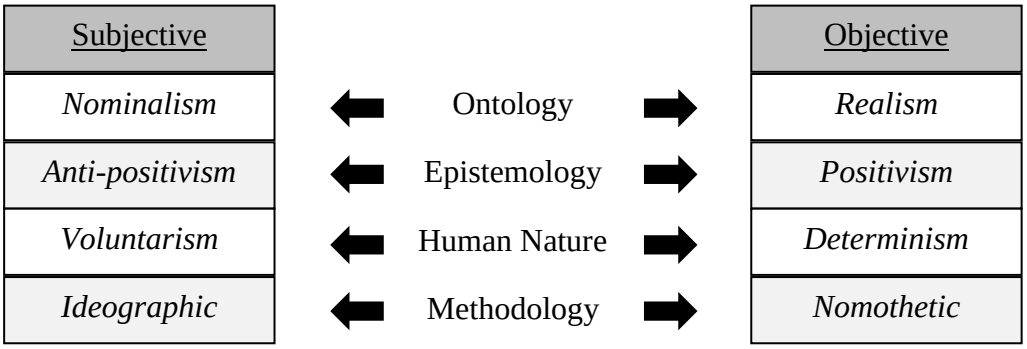


Figure 4.1: The subjective-objective dimension (Burrell & Morgan, 1979, p.3)

4.2.2 Epistemology

Epistemology is the theory of knowledge and justification, in which the main focus is on the body of concepts, theories, and problems central to understanding knowledge. Justification relates to the reason to believe, evidence, or warrant, and is as important in epistemology as knowledge itself. Epistemology can also be defined as a division of philosophy that involves investigating human knowledge in terms of its origin, nature, methods, and limitation.

Philosophers think a great deal about the nature of perceiving and what can be known through perception or other sources of knowledge such as memory, consciousness,

reflection, and testimony. Epistemology begins with perception and describes the experience based on beliefs derived from the sensory experience. It is natural to believe in things from experience, which is justified. Justified beliefs are not only desirable and reasonable, but are also expected to be true.

Jones, Hayward, and Cardinal (2004) explain belief justification, situational justification, and propositional justification as kinds of justification. Belief justification belongs to actual beliefs. Situational justification is based on the information situation or status of the situation, where the situation includes perception and background beliefs and knowledge. Propositional justification involves justification where the situation provides the justification for believing in it.

Knowledge is not possible without belief justification. Sosa (2008) argues that justified belief is important for knowledge because things known are justified, and many things that have been justified are also known. Knowledge and justified belief are closely associated, and the major difference between the two is in the condition of being true or false. Audi (2011) argues that in epistemology, perceptual, memorial, introspective, a priori, inductive, and testimony-based beliefs are different kinds of beliefs (Table 4.1).

Table 4.1: Types of Beliefs (Audi, 2011).

Type	Description
Perceptual	Perceptual beliefs are from sensory experience.
Memorial	Memorial beliefs are stored in memory.
Introspective	Introspective beliefs are conceived by looking within.
A Priori	A priori beliefs are based on previous observational experience.
Inductive	Intuitive beliefs arise from a rational grasp of critical concepts.
Testimony	Testimony beliefs are derived from the perceptions of others.

4.3 Research philosophical paradigms

The introduction of the present research (Chapter 1) developed the philosophical idea for the study, which is the investigation of factors that influence information systems project management practices within governmental organisations in Kuwait. In the thesis, the author endeavours to validate the framework developed by McLeod and MacDonell (2011) and evolve the framework from an understanding of Kuwait-specific (Middle East) environmental factors for IS project management. Considerations was given to the philosophical assumptions, procedures of inquiry, and specific research methods which underlie the project (Chapter 2 and 3 for framework). For the study, the researcher investigated approaches for data collection, analysis, and interpretation to support the research design as recommended by Walsham (2006).

Research paradigm or worldview is defined as, "*a basic set of beliefs that guide action*" (Creswell, 2014, p.6). In other words, a paradigm is a framework within which theories which impact on how the world is perceived are arrived at. It determines perspectives, of how things are linked and understood. Krauss (2005) argues that paradigms have implications for meaning. Post-positivism, constructivism, transformative, and pragmatism are four worldviews (Figure 4.1).

Postpositivism	Constructivism
• Determination • Reductionism • Empirical observation and measurement • Theory verification	• Understanding • Multiple participant meanings • Social and historical construction • Theory generation
Transformative	**Pragmatism**
• Political • Power and justice oriented • Collaborative • Change-oriented	• Consequences of actions • Problem-centered • Pluralistic • Real-world practice oriented

Figure 4.2: The four research paradigms (Creswell, 2014)

4.3.1 Postpositivist paradigm

In the post-positivist worldview, quantitative research holds true more than qualitative research. The worldview is also known as the scientific method, empirical science, or positivist research because it challenges the traditional notion of the absolute truth of knowledge. In deterministic philosophy, causes determine outcomes. In this technique, the goal is to identify and assess causes that influence outcomes. Knowledge developed through a post-positivist lens requires careful observation to measure objective reality as it exists. Laws and theories that govern the world need to be tested and refined to understand the world.

Evidence established in research is imperfect and fallible, and the absolute truth can never be found. The process is about making claims and refining or abandoning them for other stronger claims. Knowledge is shaped by data, evidence, and rational considerations. Goals of the research are to develop relevant and true statements that can explain descriptions of causal relationships of interest. Competent inquiry requires being objective, using standard methods, and reducing bias.

4.3.2 Constructivist paradigm

Under social constructivism, reality is determined by people rather than by objective or external factors. The social constructivist does not consider constructions, that is, views held about the world to be an objective reality, and focuses instead primarily on subjective consciousness (Easterby-Smith et al., 2008). Social constructivism assumes that reality is socially constructed and given meaning by, in this case the mixed group of IT professionals involved. The researcher looks at the complexity of participants' views and negotiates meanings by listening carefully.

One of the objectives in this research is to review the critical success factors and the potential barriers of implementing a recently installed upgraded IT system. Many of these factors are based on psychological or behavioural attributes of the workers in these organizations. In view of how the complex traditions and cultural attitudes of Kuwaiti society impinge on business practice, a constructivist understanding of the world is chosen to complete this research. By relying on the participants' views of the

situation, the researcher negotiates meanings by listening carefully. The intent is to make sense of the meanings of professionals engaged in IS projects. This technique allows the researcher to develop a theory or pattern of meaning on factors influencing the phenomenon inductively.

4.3.3 Transformative paradigm

Transformative research provides participants a voice for raising their consciousness or advancing ideas or agendas for change. The technique provides a platform for reform and choice. The transformative worldview has a focus on the needs and groups or individuals within society that may be marginalised or disenfranchised. Using the approach, theoretical perspectives can be integrated with philosophical assumptions to examine issues.

4.3.4 Pragmatic paradigm

The pragmatic worldview arises from actions, situations, and consequences rather than antecedent conditions. The investigation is concerned with applications and solutions for problems. The focus is on the research problem rather than methods, and all methods or approaches can be used to explain the problem. The technique is a philosophical underpinning for mixed methods studies. It is helpful to recognise that pragmatism is not committed to any specific system of philosophy and reality, but applies to mixed methods research, allowing researchers to draw liberally from quantitative and qualitative assumptions. Researchers have freedom of choice on methods, techniques, and procedures.

The approach is about what works at the time, rather than the duality between reality within the mind and independent of the mind. Researchers consider what and how to research based on intended consequences, and where they want to go with the findings. While selecting the approach, it is necessary for researchers to provide a rationale for why quantitative and qualitative data should be mixed. In the worldview, researchers consider that the external world is independent of the mind and what is lodged in it, and the need is to explore questions about reality.

4.4 Research approaches

The research methodologies used in social sciences are commonly distinct of either being quantitative or qualitative, though other classifications exist. In last decades there has been growing concern regarding the longstanding debate on adequacy of research approach methods in the social science. In particular, methods derived from the nature sciences have come to be seen as increasingly controversial as a basis for social research; therefore, attention has been dedicated to a research methodology for effective alternatives.

Selection of a research approach is based on the nature of the research problem on the issue being investigated, which is the study of factors that impact the outcome of IS projects, the researcher's personal experience, and the participants for the study, which includes project's team and organisation executives (Creswell, 2014).

Qualitative, quantitative, and mixed methods are three research approaches, which can be used for the investigation. It is helpful to ignore qualitative and quantitative approaches as distinct approaches, but rather different ends on a continuum, where mixed methods research lies in the middle of the continuum by incorporating elements of qualitative and quantitative approaches (Figure 4.3).

4.4.1 Quantitative research

Quantitative research allows the researcher to test objective theories related to the phenomenon by examining the relationship among variables, which can be measured using instruments and analysed using statistical methods. The technique involves testing theories deductively, minimising bias, controlling alternative explanations, and generalising the findings for the population.

The quantitative approach is a means of testing hypotheses by examining the different relationships among variables. These variables are measured using tools so that the numbered data can be analysed in a set of statistical procedures (Creswell, 2009). The quantitative research emphasises on numbers that represent different levels and values of theoretical constructs. According to Myers and Avison (2002), some of the common

methods of quantitative research are: survey methods, laboratory experiments and numerical methods.

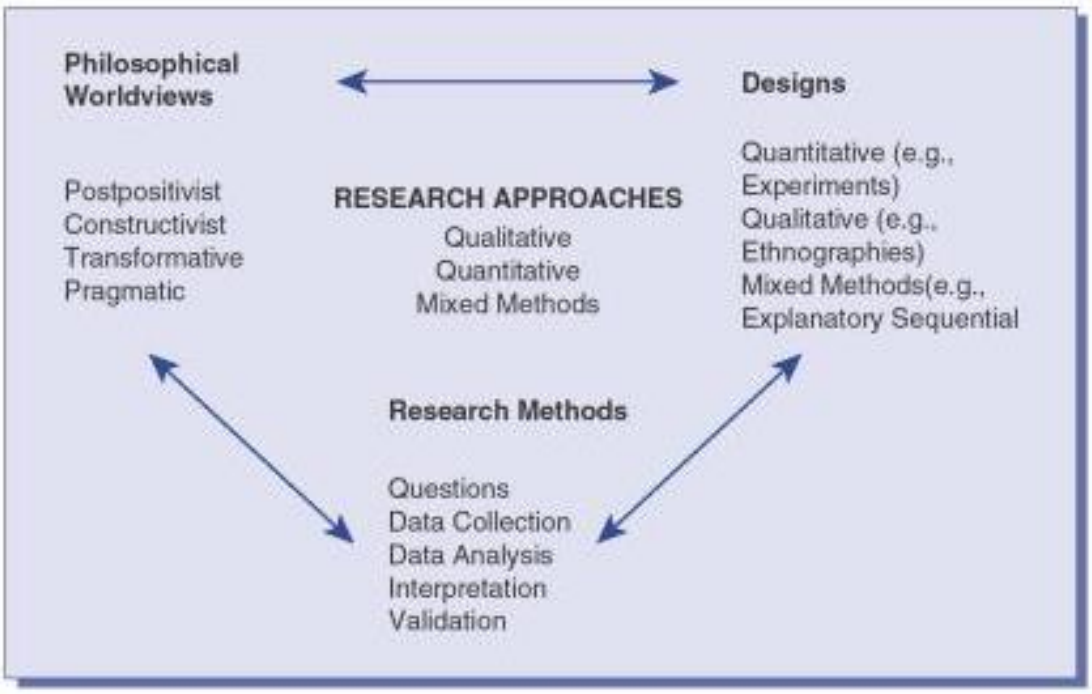


Figure 4.3: Research Framework (Creswell, 2014)

4.4.2 Qualitative research

There are various definitions for qualitative research. Creswell (2013), defines it as; "*an approach to inquiry that begins with assumption, an interpretive/theoretical lens, and the study of research problems exploring the meaning individuals or groups ascribe to a social or human problem.*" (Creswell, 2013, p. 64)

Qualitative research does not have firm guidelines, which allows the researcher to explore and understand the meaning professionals ascribe to the IS project management phenomenon. In the technique, questions on the phenomenon are developed, data is collected in the respondents setting, and data analysis involves building inductively from particular to specific themes related to the IS project management phenomenon. The technique supports looking at the phenomenon with a focus on the individual meaning, and the importance of rendering the complexity of the Kuwait-specific situation.

Data collection of qualitative research is normally conducted within its natural settings, allowing sensitive consideration to the participants under study, which allows researchers to analyse data inductively and/or deductively to form themes or patterns. (Creswell, 2013, P. 65).

The qualitative research is subjective in nature and it enables the researcher to perceive events from the insider's perspectives due to its flexibility. This approach shows a strong sense of context and importance to events that have occurred in the past and explores their relation to the future outcomes.

4.4.3 Mixed methods research

Mixed methods research involves collecting quantitative and qualitative data, and integrating the two forms of data, allowing the researcher to use research designs involving philosophical assumptions and theoretical frameworks. The combination of qualitative and quantitative approaches provides a more complete understanding of the research problem than either technique alone.

4.4.4 Rationale of the qualitative approach

Creswell (2013), points out that quantitative research is an appropriate approach to use to:

> "*study a research problem when the problem needs to be explored; when a complex, detailed understanding is needed; when the researcher wants to write in a literary, flexible style; and when the researcher seeks to understand the context or settings od participants.*" (Creswell, 2013, p. 65)

As the objective of the research is to obtain a deeper understanding of a particular problem, i.e. IS projects in HEI, the qualitative approach was found the most appropriate to use as to explore and understand the phenomena.

It was crucial to pay attention to research design at an early stage and think about the kind of conclusions that could be drawn from the investigation. The present study is interested in explaining the phenomenon of IS project management within

governmental organisations in Kuwait. Ignoring research design could affect data collection and analysis, so it was critical to design research with a robust approach as explained by Bryman and Burgess (2002). Design is not primarily about techniques and procedures, but about care and attention to detail, resulting from a passion for the integrity of research-based findings. Gorard (2013) explains research design provides a basis for convincing the audience who could be sceptical about the research conclusions, and the safety of underlying decisions. Issues such as safety, efficiency, and equality are addressed through rigorous design.

Rigorous research designs do not specify data to be used or collected in existing design structures such as the case study, longitudinal, randomised controlled trial, or action research. It is helpful to think about research design as an architect's plan of a building.

Elements of research methods include cases, ways of allocating cases of participants to groups, sequence of data collection, and manipulated interventions. Cases are participants or objects of study, which could be allocated to groups using a variety of techniques such as random, cut off point, and matching. More than one kind of data, such as a standard test and an interview, could be taken from the same cases. Intervention or change of some kind could influence the cases.

The research design is used as a way of organising the study from its inception to maximise the likelihood of generating evidence that provides an answer for the research questions. In the rationale of the study, the researcher provides the basis for the design appropriate for the investigation.

Research design is a way for the researcher to explore ways in which the research is located in a wider context, and the range of factors that could influence the findings. Issues could arise from the relationship between theory and research, and the degree to which the approach is appropriate. The first distinction is between quantitative and qualitative techniques, which are research strategies with different ways of conceptualising how phenomena should be studied. The distinction is more than whether the investigation includes quantitative data.

In the early stage, it is helpful to understand the context of the investigation. The theory applied by the researcher will help explain how the findings of the investigation into factors influencing information technology project management are interpreted, and provide insight into how the factors are unique to project management practices in Kuwait.

Factors that influence the management of IS projects practices are known from the body of knowledge, but the present study is interested in exploring factors in a unique cultural environment to better understand the phenomenon. In this way, the investigation is informed and influenced by theory. Findings from the investigation will contribute to the body of knowledge to which the theory relates.

The researcher conducted a comprehensive literature review to filter and analyse what is already known about IS project management. Bryman (2012) explains that the researcher's views about the nature of the relationship between the theory and the research also have implications for the investigation Therefore, the researcher engaged in theoretical reflections but did not form a hypothesis for subsequent testing. Instead, an alternative position was adopted, in which theory would be the outcome of the research process. Findings will show the factors after the research has been conducted. The difference in position has implications for the investigation, as the researcher plans to use a more open-ended strategy, as suggested by Myers and Klein (2011), where theoretical ideas emerge from the data.

The research process is influenced by the assumptions and views about how the research should be conducted. In the scientific approach, it is common to formulate a hypothesis, and test it with precise measurement techniques. The view, however, is not universally shared, as observed in the discussion on epistemology earlier. This raises questions on how the phenomenon of IS project management should be studied, and whether a scientific approach should be adopted.

Assumptions about the nature of the phenomenon of IS project management also influence the research process. A common suggestion is that the phenomenon should be viewed as external to social actors, over which they have no control. In the case of IS

project management, however, the suggestion is not germane because the culture of an organisation and behavioural expectations exert a powerful influence. The researcher also considers the phenomenon to be in the process of transformation through innovations in project management practices (Section 4.2.1 for discussion on ontology).

4.5 Research strategy

The investigation of the current study is of an academic nature, but the researcher was also interested in making the findings valuable for the larger community including professional practice. Being a process of enquiry and investigation, the research composes a pre-determined set of questions to be answered by gathering information, and analysing that information. The investigation is systematic and methodical, implying that the research is well-organised, involving a series of stages designed to add to knowledge on factors that influence IS project management practices.

For the investigation, Wilson (2010) argues that it is also helpful to understand the distinction between methods and methodology. The strategy for the research methodology is concerned with the overall approach, including the theoretical application to the collection and analysis of data. Methods, on the other hand, refer to ways of collecting and analysing data.

The investigation could be considered as a business or social science research with the goal of gathering information to aid business-related decision-making as explained by Collis and Hussey (2013), and Saunders, Lewis and Thornhill (2007). Neuman (2004) argues that business research involves solving business-related problems, in this case, information technology project management practices. The investigation encompasses business disciplines including information technology and project management.

Beyond the understanding that the investigation is about providing answers to questions and developing knowledge, the questions themselves are significant enough to warrant an investigation. Factors that influence information technology project management are understood in the global project management context, yet project managers face

challenges in deploying information technology projects within specific cultural contexts. The researcher sought to understand the Kuwait-specific cultural context and the related influences on project management practices. The researcher believes the findings are crucial for decision-making, without which project managers will face difficulty in fully understanding the factors.

4.5.1 Research Methods

In quantitative methods, maths and statistics are used for the investigation. Using numbers, researchers aim to accurately characterise variables and examine relationships between them explain (Swift and Piff 2011). In the scientific approach, the researcher could test a hypothesis such as whether unique cultural factors are present in information technology project management practices. Since the understanding is already established, the researcher does not retest the hypothesis, but uses it as an example for the case of quantitative techniques. The approach also allows researchers to build models, made up of equations, to represent the phenomenon. Models are useful for asking 'what if' types of questions without having to change the existing system. Using the technique, the researcher could examine the influence of certain factors as an extension of the investigation. Models do not provide the exact solution, but they provide a reasonable approximation for the situation using a series of assumptions. Models could be simple or complex, depending on the level of analysis required. The use of spreadsheets is common in quantitative approaches, and tools such as MS Excel and SPSS are widely used by researchers.

Qualitative methods were used to collect and analyse data to support the research design. A variety of tools are available for different types of enquiry, and it is critical for the researcher to apply the correct tools for the best outcome (Walliman, 2011). Davies (2007) explains, for the findings to be useful, it is essential to meticulously select the appropriate method.

Qualitative research involves developing inductive theories. The qualitative research process is cyclic, with three interlinked cycles: design cycle, ethnographic cycle, and analytic cycle (Figure 4.3). In the approach, the process of induction alternates with

deductive reasoning. In the approach, the design cycle is the first component with four interlinked tasks. First, the research question is formulated. Second, the literature is reviewed, and a theory is incorporated. Third, a conceptual framework is developed for the study. Finally, an appropriate fieldwork is selected.

The second component is the ethnographic cycle. The process involves data collection, which includes designing the research instrument, recruiting participants, collecting data, and making inductive inferences. The ethnographic cycle is related to the design cycle, because there is a logical need to follow on from the conceptual design to the application. The third component is the analytical cycle comprising of qualitative data analysis. Grbich (2007) argues the process involves developing codes, description and comparison, categorising and conceptualising data, and theory development. The closely related tasks are conducted in a circular manner throughout the analytic process. The analytic cycle links back to the original design cycle, as theory development is informed by knowledge from the design cycle. Findings from the analytic cycle are also compared with the original conceptual framework to contribute new concepts or explanations to the body of knowledge.

Mixed methods research provides an intuitive way of conducting research using quantitative as well as qualitative techniques. Creswell and Clark (2011) explain that in the approach, neither the qualitative nor the quantitative method is inherently linked to any particular inquiry paradigm. The technique allows for breath and depth of understanding and corroboration. Researchers mix the two forms of data, and combine procedures into specific research designs for the study. Problems suitable for mixed methods include those with insufficient data sources, results needing explanation, exploratory findings needing generalisation, second method to enhance the primary method, theoretical stance, or an investigation with many phases.

The approach provides strengths that offset the weaknesses of quantitative and qualitative research. Quantitative research is weak in building an understanding of context or setting, interpreting the feelings of participants, and accounting for personal bias. Qualitative research is deficient from personal interpretations and the ability to generalise findings to a large group. Mixed methods research provides a solution for

these issues, providing answers for questions that cannot be answered by quantitative or qualitative approaches alone. For the best outcomes, a solid grounding in mixed methods research is necessary.

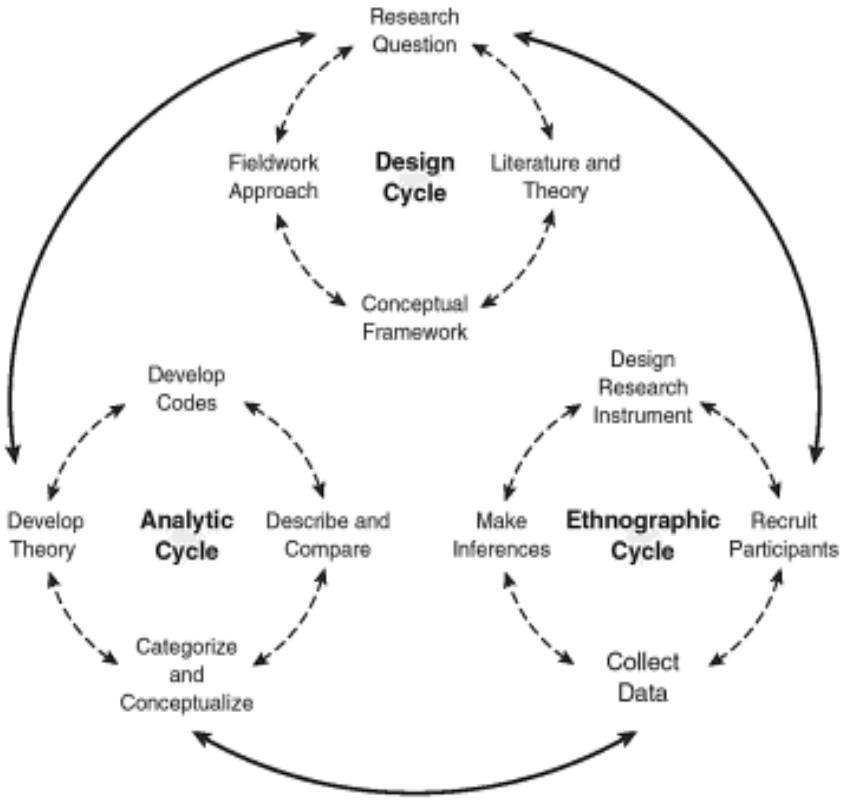


Figure 4.4: Hutter-Hennink qualitative research cycle (Hennink & Hutter, 2011)

4.5.2 Grounded Theory Method (GTM)

GTM has been adopted in many fields of research, including IS research, and the number of studies adopting the GTM is increasing. Glaser and Strauss (1967), state that It was first developed in the field of sociology during the1960s with the aim of generating empirically grounded theory based on the systematic exploration of a phenomenon. This method aims "*to discover what is going on, rather than assuming what should go on*" (Glaser, 1978, pp. 159). In this context, as (Fernandez and Lehmann, 2005) illustrate, the "*discovery*" is achieved by following a rigorous,

systematic and comprehensive approach to data collection and analysis, that is basically used for the identification of useful theoretical conceptualisations.

The GTM provides a systematic approach that takes into consideration an extant theory; however, it is not driven by it. This method features multiple characteristics, which allows scholars to effectively deal with the important issues of bias and preconceptions. It allows theorists produce useful, relevant and up-to-date theory-building studies (Partington, 2000). The GTM embeds the "*Triangulation*" technique (Glaser, 1998); it values and gets the benefit of professional experience (Glaser, 1998; Urquhart, 2012); it can study emerging phenomena efficiently (Lehmann, 2001; Urquhart, 2012); and it helps IS practitioners to better understand their environmental context (Glaser, 1998).

A Grounded Theory (GT) is a theory that is derived from the study of phenomena inductively. The key analytic assumptions involved in the GTM could be either through a "*Constant Comparison*", or "*Theoretical Sampling*". In general, GTM is an approach for looking systematically and frequently at qualitative data aiming at the generation of theories. Although, the GTM is often seen as a qualitative research method, in actual fact it can be further extended (Strauss and Corbin, 1997). The GT is constructed through a systematic approach of data collection and analysis, which is pertaining to that phenomena. This systematic approach leads to the discovery of a theory, develop it, and provisionally verify it. The interesting aspect of GTM is that it does not begin with a theory and then attempt to prove it. It rather, begin with an area of study and then allowing what is relevant from the research to emerge and to build a general theory that fits the data (Strauss and Corbin, 1997).

Myers (2013) believes that the systematic data collection and analysis could be seen as a disadvantage. His concerns were built on the fact that the GTM could be an overwhelming approach for the novice researchers especially at the coding level. The coding focuses on too many details in order to concrete the base of the theory; however, this process could be a hard to implement for a beginner researcher that normally lack required skills in using grounded theory methods. Moreover, Olesen (2007), indicates that the GTMs tend to produce large amounts of data, often difficult to manage. Nonetheless, the highly qualitative nature of the results makes them difficult to present

in an effective way to use by practitioners. Olesen (2007), also mentioned that the subjectivity of the collected data leads to complications in the reliability and validity of methods and information and it causes difficulties in detecting and/or preventing researcher induced bias.

This also leads to uncover another drawback of the GTM as it is a very time consuming approach. This method requires theory construction that is based on data testing through iterative rounds of interview sessions (Charmaz and Belgrave, 2002). It would be very difficult to use this approach in the current research due to time limitations.

One of the major disadvantages from the perspective of this research is that it does not examine any stakeholder's involvement in the research. Most of the data for this research were mainly collected from the various stakeholders of the two IT projects in the KUCIS. Therefore, and for the above-mentioned drawbacks, the GTM has been rejected for these reasons. Moreover, this research does not aim at constructing a theory from the data gathered; rather it aims at identifying the key factors that impact the projects' outcome in a governmental HEI context, and understanding how social and technical subsystems interplay during the implementation process of ISD projects.

4.5.3 Case Narrative Method

Our review of the ISD studies reflected a gap in using the narrative approach. Avison *et. al* (2016) using narrative analysis in ISD case studies helps researchers to tell stories of different eventual changes and follow the spirit and techniques of the French New Novel. Storytelling presents and effective cross-cultural communication tool that helps technically and socially orientated project members to be heterogeneous and build up a sociotechnical fit in the ISD projects (Barker and Gower, 2010). In this study, we discuss examples of verbal and nonverbal communication norms among the widely diverse context of public HEIs in Kuwait.

While case study design allows extended exploration and deep understanding of complex problems, the narrative approach presents HEIs as a collection of verbs (i.e.

social processes) rather than just nouns (i.e. social entities) (Van de Ven and Poole, 2005). This mix of interpretative approaches helps mapping complex interactions between entities, events, and actors (Denning, 2006). In doing so, the "*case narrative*" help conduct in-depth investigation in the change processes and outcomes of ISD projects (Markus and Robey, 1988; Myers, 1997). Further, they offer a better approach to study the under-searched context of the Higher Education in Kuwait and build generalisable theories (Gulsecen and Kubat, 2006).

Because the narrative case technique was not planned prior to data collection, it was not possible to adapt this method later due to the time limitation. Moreover, employees in Kuwaiti public organisations tend to hesitate talking about negative change events once they occur. They prefer to "*beautify*" their answers in order to make things. Also, the participants consents was not feasible during the occurrence of change events due to the turbulence and work overload associated with these results.

4.5.4 Case-Study Method

As mentioned above, research design requires a choice of research paradigm, strategy, approach and method. The case study method as a research approach, can be determined by the kind of research questions that a study is trying to address (Shavelson and Towne, 2002, pp. 99-106). The case study is pertinent when a researcher is addressing either descriptive questions or explanatory questions. A descriptive question asks "*What has happened?*" or "*What is happening?*" While an explanatory question asks "How why did something happen?" or "Why did something happen?" (Shavelson and Towne, 2002)

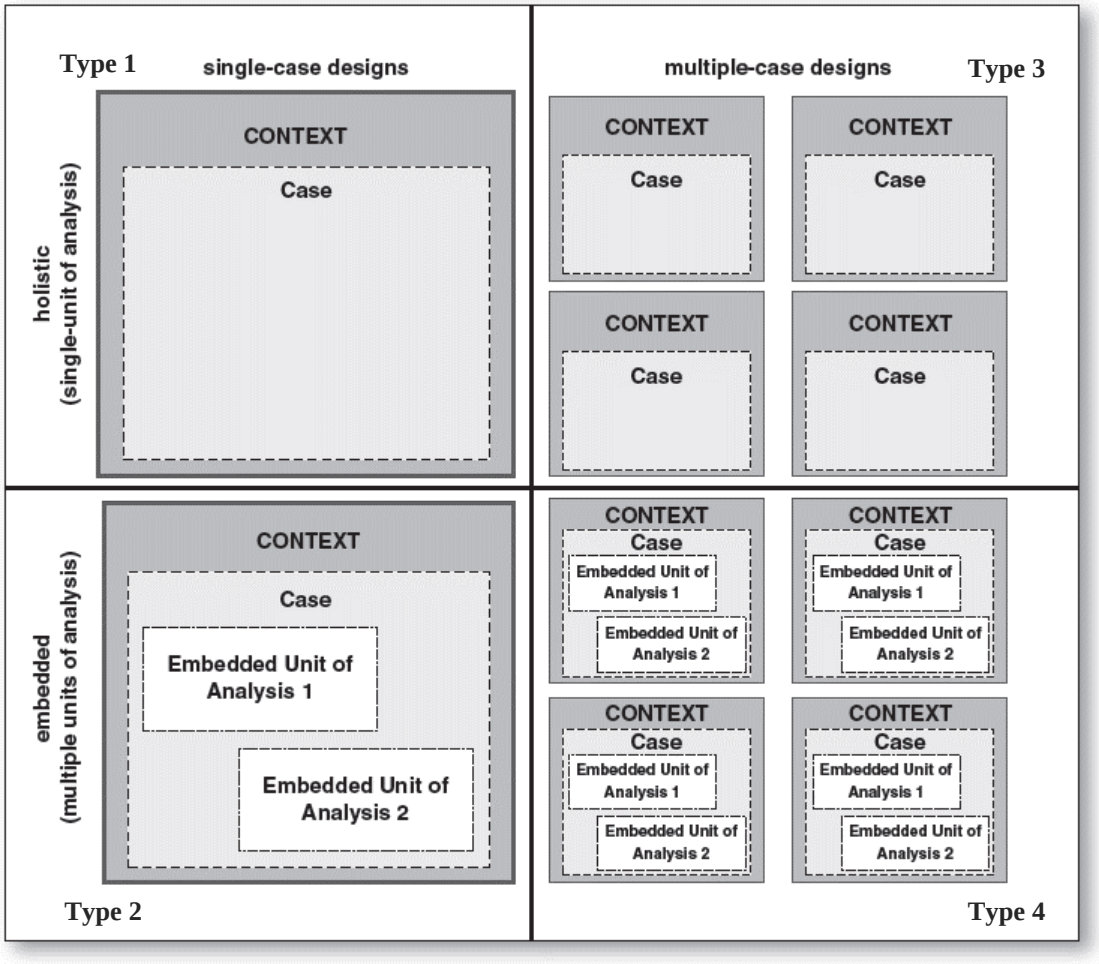
According to Myer (1997, p.7), "*The term "case study" has multiple meanings. It can be used to describe a unit of analysis (e.g. case study of a particular organisation) or to describe a research method*". On the other hand, Yin (2014, p.16) describes case study as an "*empirical inquiry*". It concerns the investigation of a contemporary phenomenon within its real-life context. He singles out this situation when the boundaries between phenomenon and context lacks clarity.

The case study emphasises the collection of data in its natural settings rather than relying on 'derived' data. Thus, it is more appropriate when a researcher is addressing a phenomenon within its real-world context (Yin, 2013). Nonetheless, Yin (2014) suggests that case studies as a research method could be also used in conducting evaluations. The research strategy chosen for this research is an interpretive case study research to allow conducting an extensive and in-depth study of two IS projects within KU context. The case study method allows reviewing the qualitative data into different novel concepts, which constructs a better understanding of the usage, impact, benefits, obstacles, quality and challenges of IS projects implementation in HEI context.

Case study research involves developing valid inferences from outside the laboratory. There is no formula for the choice of case study research method, but it is influenced by the research questions. Seeking to explain the how and why of a social phenomenon warrants the case study research technique. The technique is also relevant when the questions require an in-depth description of a social phenomenon.

Case study research method is useful when contributions are made to knowledge. In the desire to understand the complex social phenomenon, the technique allows investigators to focus on the case and retain a holistic and real-world perspective. For information technology project management, where the researcher cannot manipulate relevant behaviours, the case study technique is preferable. The approach provides for direct observation of the events under investigation, and interviews with those involved in the events. The approach provides the author the unique ability to deal with a variety of evidence including documents, artefacts, interviews, and observations a (Thomas 2011). Findings from case studies have led to significant advances, especially idiographic analysis that allows for deriving vivid details of phenomena.

Case study research consists of either single or multiple cases Case study research can also be either holistic or have embedded sub-cases within a holistic case study (Figure 4.5).



SOURCE: COSMOS Corporation.

Figure 4.5: Basic Types of Case Studies Design (adapted from Yin, 2014, pp. 50)

Designing and implementing a multiple case study is more difficult than a single case study, but the ensuing data provide more trustworthy findings. However, the selection of design type for a case study depends on how a phenomenon is tackled (Yin, 2014).

To sum up this analysis, case studies in IS research are complex activities, as success or failure depends on interrelated factors and cannot be fully studied in isolation. Therefore, IS research, such as the current research, needs to conduct empirical studies in real-world settings to achieve the objectives. The current study used two embedded units (IS projects) of a single case study (Kuwait University – Centre of Information Systems) to address its research questions.

4.5.5 Advantages and limitations

Knowledge of factors influencing information technology project outcomes is available from previous research. For the author, case study is an opportunity to view a complex phenomenon through a cultural lens. The approach allows the author to concentrate on Kuwait-related cultural factors by looking at them in detail as they happen. The insights would be generalisable only for regions with similar enterprise and cultural contexts. The limitation of the approach is that the findings cannot be generalised for worldwide project management practices.

The motivation for the researcher is related to the author's employment within the KUCIS institution. Two IS projects have been carried out at the KUCIS under a strategic plan which allows the researcher to scrutinise project management practices and interview key stakeholders involved in the projects. The research is a unique opportunity to investigate the phenomenon by exploring what is different from the typical in terms of culture related influences on project management practices. It is an opportunity for the researcher to drill down as deeply as possible to derive evidence and find out answers.

The researcher's goal was to create a three-dimensional picture by looking at the phenomenon from several angles, including documentation for the projects and interviews with key stakeholders. By doing so the researcher can develop a rounded, richer, and balanced view of the topic. The primary argument for the choice of the technique is that the conclusions can be derived by not studying hundreds of information technology projects, but by studying two in detail, and employing a great deal of analysis.

4.5.6 Rationale of case study method

The qualitative approach informed by an interpretivist research paradigm, using the case study strategy were selected after taking into consideration the research aim, the epistemology and all the constraints, using interviews and archival documents as data

collection techniques. Then, the interview questions were designed with ethical considerations. This in-depth, qualitative case study design was chosen because it helps to explore the interaction between different related variables that define a particular situation using thick description to build understanding of the complexity of the phenomenon under examination (Yin 2013). Case study research method is based on an empirical inquiry to examine a contemporary phenomenon within its natural setting when the boundaries between phenomenon and context are not clearly evident (Yin, 2013). Therefore, case studies are considered as useful instruments to investigate a phenomenon within its real-life context to achieve a deeper understanding of implicit and explicit social processes (Benbasat *et al.,* 1987).

4.6 Ethical considerations and approval

The present section presents the ethical consideration of this study, judged to be an essential matter because it involves interviewing human participants. Research must be conducted ethically to minimise risk.

Walker (2007) defines ethics in research as about doing what is morally right or good and "above all" doing no harm. Social research often requires participants to reveal personal information to a stranger. Clark *et al.* (2005) states that it is important for the researcher to get access to data and information that is confidential, personal or emotive. These data are usually provided based on trust between the participant and the researcher. According to Clark *et al.* (2005), research should never harm the participants by revealing information that may embarrass them or endanger their life or employment.

Ethical research requires consent from all participants. Informed consent is an essential part of the ethical consideration (Walker, 2007). It must include three main components. First, it should provide the participant with adequate information about the research procedure, purpose, risk and anticipated benefits. Informed consent includes information about the researcher or the institution conducting the research. Secondly, it is the researcher's responsibility ensure potential participants have understood the

ramifications before signing the informed consent. This can be achieved by allowing time for questioning, by presenting information in the mother tongue and ensuring is easily legible. Finally, consent to participate in a study is considered valid only if voluntary and signed under no pressure. The consent form must clearly inform participants of their right to withdraw at any time.

The following ethical considerations were addressed in the present study. All potential participants were invited by email to participate after being officially approved by KU to conduct the interviews (Appendix VI). If any participant shows an interest in taking part, an information sheet (Appendix V) with full details of the research background, purpose and their expected role was forwarded. The information sheet explained that all information collected during the interview would be kept confidential and that their identity would not be identified in any report or publication. Participants have the freedom to decide what questions they wish to answer without the need to explain their reasons. Participants were also assured that if they decide to withdraw, all information collected would be destroyed. They acknowledged the use of a digital voice recorder to record the interview conversation.

If potential participants accepted the invitation, they were asked to sign a consent form (Appendix III) and acknowledge their full understanding of their obligations and that participation is voluntary.

At the University of Salford, research involving human subjects, such as the interviews conducted in the present study, must comply with the basic ethical principal. The College Ethics Panel required the information sheet and consent form before any data collection. The process of applying for ethical approval was carried out in May 2013 when the application form, the information sheet, the consent form and the interview questions were submitted. Ethical approval for the researcher to proceed with data gathering was granted in November 2013 (CASS120044).

4.7 Research design implementation

Figure 4.5 shows the implementation of research design, where answers for the research questions were derived in nine stages. The illustration shows action research, where the researcher would derive specific knowledge for the information technology project management problem in the context of Kuwait's intuitions culture. Methods selected for gathering information aid the investigation in understanding what is possible or pragmatic for the given circumstances as suggested by Bell (2006).

The case study is used to study the cultural aspect of project management practices in detail. Findings from the case study were followed up with interviews to explore key issues that merit further investigation.

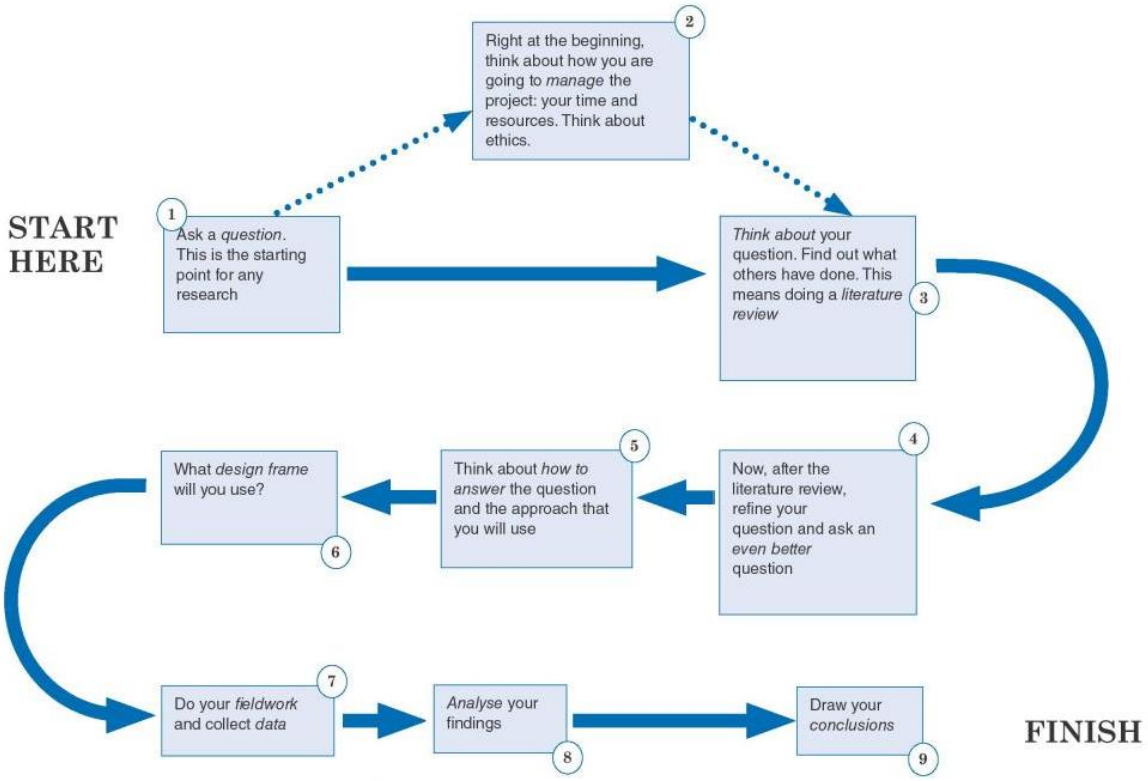


Figure 4.6: Implementation of research design (Thomas, 2013)

4.7.1 Pilot study

According to Yin (2013), pilot interviews aim to improve interview questions and procedures. The purpose of the pilot study was consistent with the methodology concluded from the literature review, confirmed the duration of the interview and refined the questions.

The pilot study was undertaken in November 2013 with two pilot participants; an IS manger and a technical member. A set of preliminary interview questions were prepared. A few issues raised during the pilot study were used to make minor changes to the questions improve the interview. The two participants were not part of the targeted sample, they did not join the chosen projects and were only been used to enhance the quality of the interviews.

4.7.2 Interview Protocol

The theoretical framework is developed to create a foundation from earlier empirical work. Walsham (1995a) believes that in an interpretive case a study, the primary source of data is interviews while, the secondary data review looks at documents, reports and previous research on the research site.

Yin (2013) illustrates that interviews are considered as the most important source of information for case studies. The use of this technique can help the researches to collect valid and reliable information that are relevant to research questions (Saunders *et al*, 2007). Interviews can be either structured or semi-structured. A structured interview is based on predetermined and standardised set of questions which does not allow one to divert. In contrast to the rigidity of this type of interview, the semi-structured interview is also based on set on questions but the researcher is more flexible and allowing new ideas to be brought up. This type of interviews is particularly useful since it provides in-depth information and gives the opportunity to discover the participant's experience and thoughts using their own word and to express their opinions freely to formulate a larger or other enquiry. Oates (2006) reported that semi-structured and unstructured interviews are primary used for 'discovery' purposes and used for exploring personal beliefs.

The interview of this study used a face-to-face semi-structured strategy to conduct the interviews, involving 14 main questions in order to explore the success/failure factors that impact the outcome of the two IS projects in KUCIS. The main purpose of the interview questions was to gather sufficient information to achieve the aim and objectives of the present study. Previous research and the literature review were the main sources in developing the interview questions.

4.7.3 Semi-structured interviews

Conversation is a mode of interaction, where people talk, interact, pose, and answer questions (Brinkmann and Kvale 2015). Conversations provide opportunities to learn about feelings, attitudes and experiences (Myers and Newman 2007) held by information technology project managers. Interviews are conversations, where researchers ask questions on specific topics and listen to what people say. Interview research is an opportunity to explore the phenomenon from the perspective of wide-ranging stakeholders including clients, developers, managers, and implementers.

King and Horrocks (2010) explain that interviewing as presents the subjects' point of view and unfolds the meaning of their experience. Different forms of interviews serve different purposes.

Listening to conversations between professionals the researcher could construct knowledge from the inter-action between the interviewer and the interviewee. From structure and purpose, the technique would involve careful questioning and listening with the goal of obtaining tested knowledge. In the technique, the researcher will introduce the topic and critically follow up on the subjects' answers to the questions.

The researcher reviewed best practices in interview design to design interviews for the investigation. The options available to the researcher were face-to-face interviews and phone interviews. For the investigation, meeting in person was the best way to conduct the interviews. Phone interviews, though quicker to set up, could be challenging and awkward. Advantages of the technique include no travel requirement, and plenty of

opportunities to ask follow-up questions. Face-to-face interviews are easy to adjust to the surroundings, ask questions, and pick up on mannerisms. There is an opportunity to build rapport with the interviewees, to help put them at ease and leading them to in-depth conversations on information technology project management practices. Being comfortable in social situations, face-to-face interviews were appropriate for the this research. The researcher also made preparations for situations such as the conversation going awry by using a standard protocol for the interviews.

4.7.4 Selection criteria of participants

Although there are around 80 IT staff members employed at KUCIS, the actual number of potential participants for this study was much smaller. The small pool of participants may be explained by the conservative culture in the Middle East in general and the Gulf countries in particular. Those who agreed to participate were mainly individuals with whom the researcher had personal contact. The choice then was also limited by the requirement to include representative staff members who worked in any of the two chosen IS projects. This reduced the potential number of participants to between 15 to 30. The preliminary plan for the data collection included the study of a third project; however, there was not a sufficient number of the project team willing to participate.

4.7.5 Interview sampling

Our literature review pointed the use of purposive sampling to consider different social and technical orientations of the IS project management actors (Walsham, 1997). The purposive sampling enables the researcher to choose cases that are representative of all personal characteristics and subgroups that could be of interest to the study. There is no clear way to ensure that the selected sample is representative in the probability sense, as Williamson (2000) argues, though Bryman (1988, p.90) states that: "*The issue should be couched in terms of the generalisability of cases to theoretical propositions rather than to populations or universes*". This mean purposive sampling is actually driven by

theoretical considerations rather than the necessity to count on multiple cases of the same group. In the same sense, purposive sampling is related to theoretical sampling, which is again related to the notion of "*theoretical saturation*", which is the point where no new information is added (Williamson, 2000). Thus, purposive sampling was adopted for the current study with an observation of the concept of saturation sampling. Interviews' participants were recruited to the point when no new information or inputs were forthcoming.

Management of KUCIS plays an essential role in the planning and decision making regarding policies and strategies of the IS projects. Furthermore, they are the holder of the budget for any plane of new IS implementation. Staff member like technician were also engaged in the study since they also play an essential role as main beneficiaries in the implementation of IS projects.

The initial target of the interview process was to obtain, collect, and analyse appropriate data from 23 interviews (minimum of 15 and maximum of 30), each with a participant who was working at KUCIS and engaged in the implementation of any of two selected IS projects.

As shown in Table 4.2 and 4.3, the researcher interviewed 23 KU staff members who were part of the teams of the selected projects. The interviewees included four senior managers (P11, P12, P22, and P23), six section heads as middle tier mangers (P1, P3, P8, P13, P15, and P21), and the remainder were mainly technical IT staff (P2, P4, P5, P6, P7, P9, P10, P14, P16, P17, P18, P19, and P20). These interviews took place between November 2013 and January 2014. The first project manager for Project A was P6, before being replaced by another manager P11 at a later stage of the project. During the planning stage the manger for this project found a different job and left KUCIS just before launching the project. The project manager for Project B was P18.

Table 4.2: Research sample – Project A.

Participant	Role (Section)	Code	Position	Interview Date
Project A				
P1	Operating Systems Administrator	OS	Middle-tier managers (Section Head)	21-11-2013
P2	Operating Systems Administrator	OS	Technical Staff	21-11-2013
P3	Database Administrator	DBA	Middle-tier managers (Section Head)	24-11-2013
P4	Database Administrator	DBA	Technical staff	25-11-2013
P5	Database Administrator	DBA	Technical staff	1-12-2103
P6	Technical Support	TS	Technical staff + **1st Project Manager (PM)**	25-11-2013
P7	Technical Support	TS	Technical Staff	1-12-2013
P8	Public Relation	PR	Middle-tier managers (Section head)	2-12-2013
P9	Public Relation	PR	Technical staff/clerk	4-12-2013
P10	Public Relation	PR	Technical staff/clerk	5-12-2013
P11	Top Manager	TM	Dean Assistant	8-12-2013
P12	Top Manager	TM	Division Manager + **2nd Project Manager (PM)**	11-12-2013

Table 4.3: Research sample – Project B.

Participant	Role (Section)	Code	Position	Interview Date
Project B				
P13	Operating Systems Administrator	OS	Middle-tier managers (Section Head)	23-11-2013
P14	Operating Systems Administrator	OS	Technical staff	23-11-2013
P15	Database Administrator	DBA	Middle-tier managers (Section Head)	24-11-2013
P16	Database Administrator	DBA	Technical staff	24-11-2013
P17	Database Administrator	DBA	Technical staff	24-11-2013
P18	Quality Assurance	QA	Technical staff + **Project manager (PM)**	19-12-2013
P19	Quality Assurance	QA	Technical staff	23-12-2013
P20	Student Information System	SIS	Technical staff	5-1-2014
P21	Student Information System	SIS	Middle-tier managers (Section Head)	24-12-2013
P22	Top Manager	TM	Division Manager	24-11-2013
P23	Top Manager	TM	Dean	5-1-2014

4.7.6 Design of interview questions

The interview process recruited key stakeholders in different roles and functions allowing for different perspectives and related decision-making. From the different perspectives, the researcher gained a three-dimensional view of project implementation,

and the outcomes. For the interview, the researcher prepared 14 questions aimed at specific characteristics of project management implementation (see Exhibit II for interview questions). The themes which informed the interview questions included; project management practices, environmental influences, outcomes, and reflection on factors influencing practices and outcomes. The interview includes open-ended questions to encourage participants to share their insights and opinions. Questions are designed to build an understanding of the participant's knowledge and project management practices within the environment. By relating the participant's IS project management practices to global best practices, the researcher came to understand if cultural or organisational factors constrained participant behaviour.

4.7.7 Implementation of the interviews

Interviews were conducted in both Arabic and English depending on the mother tongue of the interviewee. This helped participants to feel comfortable during the interview and to express themselves regardless of language barrier.

McNamara (2009) summarised the conditions to be considered when conducting an interview. These are; to choose a place without distractions, to explain the purpose of the study, to state terms of confidentiality, explain the interview's format, indicate interview length, and not to count on memory when recalling and recording their answers.

The interview took place at a convenient time in the participant's office at as the most comfortable location within the local culture. The distraction level was generally acceptable. This commitment helped to build trust and confidence between participants and the researcher. The researcher also made sure to answer any question they had before starting the interview.

Two digital voice recorders were used in the interview to guarantee accurate presentation of the views expressed by each interviewee. Use of the recorder helped to

save time as it freed the researcher from transcribing the conversation and allowed the interview to flow without interruption.

During the interview, the researcher asked one question at a time and did not hurry the interviewee in their response. The researcher remained neutral and did not show any emotional reaction to participant's answers. At the end of the interview, the researcher asked interviewees if they wished to add further comment and thanked them for participating. Each interview lasted between 1 to 2 hours.

Following the interviews, the researcher listened to the recording and transcribed the discussion. Context is the backdrop for each participant's perspective, which is also known as positionality explain Galletta and Cross (2013). Constructing the protocol for the semi-structured interview is an essential step of the process. The researcher was cautious in dealing with dilemmas associated with the technique. The analysis of the findings is iterative in nature, involving close reading and coding of transcripts, reciprocity with participants, and researcher reflexivity. The technique will allow the researcher to explore specific thematic codes and patterns to gain insight and develop the theory.

The researcher strived for researcher reflexivity to assess methodological and ethical issues that could emerge in the process. The analysis involves organising the data at an early stage to locate thematic patterns. the analytical possibilities include individual experience within the relational context and the structural conditions and historical context for the participants.

4.7.8 Archival documentation

In addition to data gathered from the 23 semi-structured interviews, this research relied on archival documents related to the two IS projects as additional sources for collecting data. These included letters, e-mail correspondence, meeting minutes, memoranda, official publication, brochures, journals and branch literature. The researcher also

reviewed official publications, reports, requests for quotation (RFP) and prospectus to identify different aspects of IS projects conducted at KU.

The information of archival documents is very useful for a case study research and they are of various different forms such as: letters, e-mail correspondence, meeting minutes, memoranda, official publication, brochures, journals and branch literature. Information published in various mass media could be also in the form of archives, whether visual or audible or readable. Moreover, there are additional records in computerised form, which are more commonly used these days. (Yin, 2009)

4.8 Qualitative data analysis

The aim of data analysis is to provide a means to draw conclusions and/or inferences from a research. As the data collected in any study may obscure these conclusions from being immediately obvious, therefore, data analysis should provide a means to get to valid conclusions by finding a method to scrutinise the data.

Typically, in quantitative data analysis, a large quality of data is displayed either graphically (i.e. as charts showing percentages, or changes over time), or numerically that represents of quantity or distribution (i.e. the 'P' value, or confidence interval). What has been achieved in both cases is the reduction in the overall amount of data to a simple chart or statistic, which summarises the data based on accepted analytical approaches. This summary allows to draw legitimate conclusions reflect the meaning of the data.

As qualitative data, normally extensive, the qualitative data analysis targets to make the vast mass of data more manageable; and to display a valid representation of the whole set of data.

Regardless of the chosen methodology for any research, the process of drawing meaning from collected data represents the data analysis process. Normally, a research adopting qualitative approach commence data collection until they reach a point of saturation, when there is no new input of information. Unlike quantitative research,

which wait until the end of the data collection to analyse their data, qualitative research usually starts to analyse their data throughout their study. Qualitative data analysis is a reflexive process begins at the very moment in which the researcher begins collecting data and not after the completion of data collection (Stake, 1995).

4.8.1 Techniques for data analysis

Studies do not report a single standardised procedure or clear set of agreements or approaches for the analysis of qualitative data (Oates, 2006; Saunders *et al.*, 2007; Bryman, 2012; and Collis and Hussey, 2013).

Saunders *et al.* (2007) suggest the following analytic techniques for qualitative data analysis; the development of data categories, the determination of units of the data to fit within these categories, the identification of the interrelationship between categories of data, and the development of a scheme to create a solid conclusion. The present study uses the four categories of McLeod and MacDonell's framework: people and action, development process, project content and institutional context.

Oates (2006, p.267) advises that data such as; verbal, visual and aural patterns and themes should be extracted from the research data during the qualitative analysis. According to Collis and Hussey (2013), the value of qualitative data analysis depends on the quality of the researcher's interpretation. The research findings are inductive, i.e. the broad generalisations and theories of this study derive from conclusions arising from specific observations of the research data. This study presents the qualitative data analysis of the findings based on the themes (factors) of McLeod and MacDonell's framework.

4.8.2 Approaches to qualitative data analysis

Two methods are used to analyse data in qualitative research: inductive and deductive; though each can be treated in a variety of different ways (Spencer, Ritchie, and O'Connor, 2003).

Inductive analysis uses detailed readings of data to derive concepts, themes, or a model through interpretations derived from the collected data. It uses an emergent framework

to group and investigate data. This understanding is consistent with Strauss and Corbin's (1998, p. 12) definition: "*The researcher begins with an area of study and allows the theory to emerge from the data*".

The deductive analysis approach examines whether collected data are consistent with prior assumptions, hypotheses, or theories identified or constructed by a researcher. This approach first group the collected data, and then examines it for similarities and differences. Deductive approaches involve using a structure or predetermined framework to analyse data. Essentially, the researcher imposes their own structure or theories on the data and uses these to analyse the interview transcripts.

Data analysis techniques used in this research adopt an inductive reasoning approach, because the data source for analysis was sourced from participants and not from any superimposed theoretical framework.

4.8.3 Qualitative data analysis procedures

The processes of data collection and analysis are affected by the interpretive nature of this research. The questions posed mainly determined the responses gathered. Hence, there was a collusive or a coactive relationship between the data and the analysis process. In this sense, it might be more accurate in qualitative research to use the term "*modes of analysis*" rather than "*data analysis*". According to Myers (1997), the modes of analysis are the different methods and techniques used to gather, analyse and interpret qualitative data. For the purpose of the current research, understanding and making sense of data, and integrating the data into a narrative mode is a crucial part of the analysis.

Miles and Huberman (1994) suggest that data analysis for qualitative research consists of three main procedures: data reduction, data display, and arriving at a conclusion and verification (See Figure 4.7).

Data reduction is the process of reducing and organising the mass of raw qualitative data such as: interview transcripts, observations, field notes, etc. This process includes coding texts, writing summaries, and identifying and discarding irrelevant data. Unexpected findings may require further investigation and re-examination of some data previously considered unnecessary or unimportant (Miles and Huberman, 1994).

To draw conclusions from the mass of raw data, Miles and Huberman (1994) propose that data is displayed in the form of charts, tables, networks and other graphical formats. This is a continual process that starts from the moment data is collected, allowing researchers to develop initial conclusions in the field of study. These conclusions can be examined and verified BY reference to existing field notes and/or further collected data. (Miles and Huberman, 1994)

Coding is the process of processing raw data into conceptual meaning, basically themes and categories. Each code is effectively a category/theme that pinpoints a piece of data. Miles and Huberman (1994) point out that:

> *Codes are tags or labels for assigning units of meaning to the descriptive or inferential information compiled during a study. Codes are usually attached to 'chunks' of varying size – words, phrases, sentences or whole paragraphs.* (Miles and Huberman, 1994, p. 56)

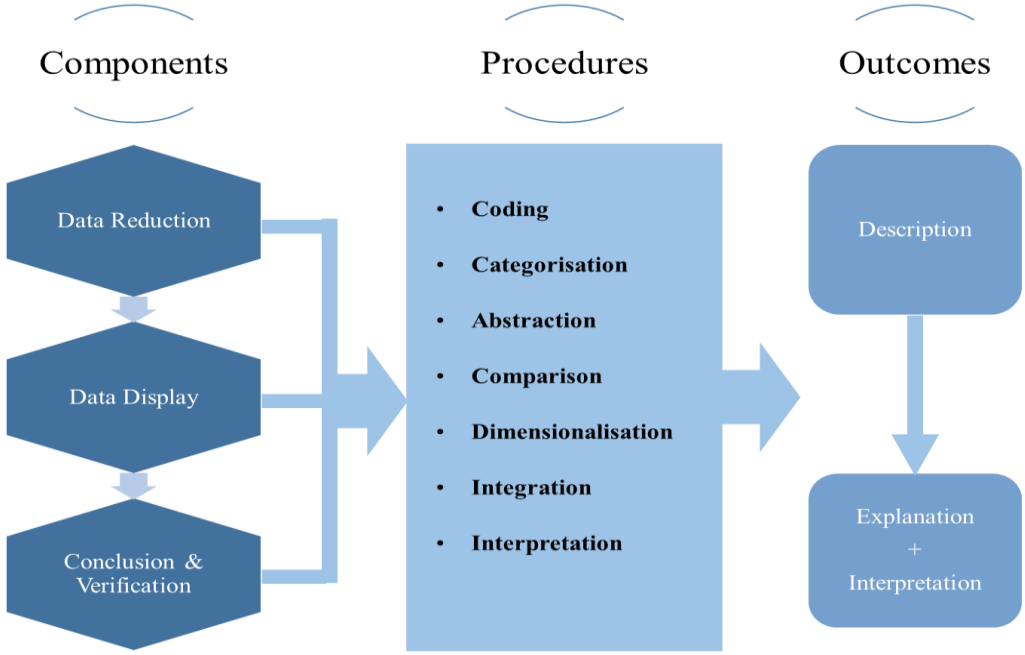


Figure 4.7: Analytical process of qualitative research (Miles & Huberman, 1994)

They indicate that good codes should be valid, mutually exclusive, and exhaustive. That means they should reflect research topic accurately. Codes should also be distinct with no overlaps and include all relevant data (Miles and Huberman, 1994). Through the process of coding data reduction is taking place. Coding involves assigning units of meaning to data chunks, which in turn can either be open, axial, or selective. These codes can then be organised and displayed to allow drawing a set of conclusions. (Miles and Huberman, 1994). The procedures and techniques of qualitative data analysis are summarised below in Figure 4.8.

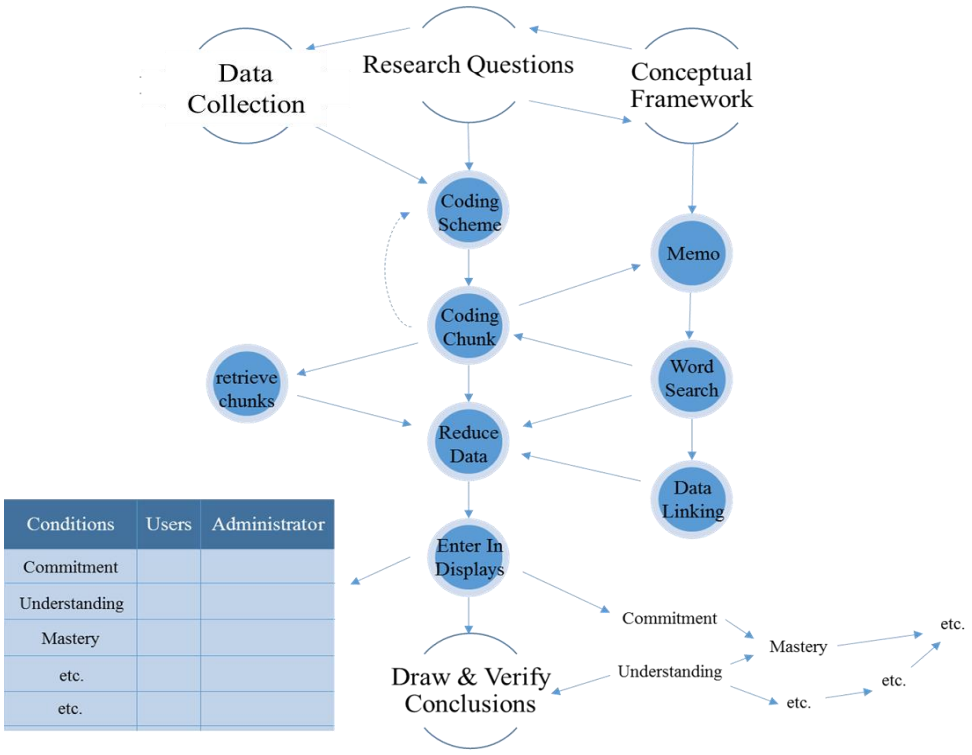


Figure 4.8: Qualitative data analysis procedures

4.8.4 Activities for qualitative data analysis

The analysis process went through multiple phases. After conducting all interviews, the audio files were partially translated (some interviews were already conducted in English), and selectively transcribed. There of the transcript was analysed thematically paragraphing the text in a way that serves the subject of this research and in proportion to the research questions through the main ideas, supporting ideas and examples. The coding process, was completed according to the adopted categories of McLeod and MacDonell's framework. This leads to the establishment of an overall mind map of the coding. At this point, it was possible to identify critical events that occurred during the implementation of the IS projects by interpreting the different development activities. This lead to plotting the trajectory of the adopted STS McLeod and MacDonell framework, which helped to identify gaps. A detailed description was written of the critical events identified during the implementation process based on extracts of the

interview transcript. A summary of activities carried out during the mode of analysis process of the qualitative data in Table 4.5.

Table 4.4: Summary of activities for data analysis/mode of analysis

Steps of Activities	Mode of Analysis
Step 1	Interviews were translated and selectively transcribed.
Step 2	Paragraphing the transcribed text in proportion to the research main focus, supporting ideas and examples.
Step 3	Coding paragraphs and organisation of coded data into themes (categories) of the adopted framework of McLeod and MacDonell.
Step 4	Establishing general mind-map of the coding.
Step 5	Understanding the different development activities and identifying the critical events that occurred during the implementation of the IS projects.
Step 6	Erecting the trajectory of STS McLeod and MacDonell's framework and identifying gaps.
Step 7	Describing the critical events identified during the implementation process of the IS projects and narrate each with an extract of the interview transcript.

Data analysis was guided and themed by the factors of McLeod and MacDonell's framework and their four categories that contains them, which identify the domain and topics to be investigated. The data analysis is carried out through the interpretations of the raw data collected from interviews and the archival documents as well as multiple literature readings, i.e. the inductive component.

The primary means of analysis is the development of these categories from the raw data of the case study into the framework of McLeod and MacDonell. This framework will be updated with new key themes and processes identified and constructed by the coding process.

The findings result from the interpretation of different sources of data, the interviews and the archived documents. Inevitably, the findings are shaped by the assumptions and experiences of the researcher conducting the study and carrying out the data analyses.

4.9 Validity and reliability

Validity and reliability are quality indicators. Although the terminology is associated with quantitative research techniques, the concepts provide useful guidance for qualitative research. Watling (1995, as cited in Simco and Warin, 1997, p. 8) states that "*Reliability and validity are tools of an essentially positivist epistemology.*" In a qualitative research project, validity and reliability depend significantly on the skill, training and sensitivity of the researcher (Labuschagne, 2003, p. 101). Put another way, research outcomes are only good as the investigator (Morse *et al*., 2002, p. 17).

The attempts of verification in qualitative research have been widely discussed over the last decades in literature (Guba and Lincoln, 1981; Morse *et al.*, 2002; and Creswell, 2014). The validity of research findings refers to the extent to which the findings are an accurate representation of the phenomena they are intended to represent. The reliability of a study refers to the reproducibility of the findings. Guba and Lincoln (1981) stressed that although the nature of knowledge within the rationalistic (or quantitative) paradigm is different from the knowledge in naturalistic (qualitative) paradigm, every research should have a sufficient "*truth value*", "*applicability*", "*consistency*", and "*neutrality*" in order to be considered worthwhile. Therefore, there should be specific criteria for each paradigm in order to address "*rigor*" (for rationalistic/quantitative paradigm) and "*trustworthiness*" (for naturalistic/qualitative paradigm).

Morse *et al.* (2002) defined the nature of verification in qualitative research as; "*Verification is the process of checking, confirming, making sure, and being certain. In qualitative research, verification refers to the mechanisms used during the process of research to incrementally contribute to ensuring reliability and validity and, thus, the rigor of a study.*" (Morse *et al*., 2002, p. 17)

Strategies and methods for qualitative research enable researchers address the negative influences on validity and reliability for achieving high degrees of both. For the investigation, the research did not tie validity and reliability to quantitative techniques, but to the theoretical assumptions of the in the investigation as suggested by Baumgarten (2010).

By measuring what the study claims to, and by avoiding logical errors in drawing conclusions from the data, the researcher provides validity. In relation to bias the interviewer is aware of the tendency to present ourselves in a good light. Particularly if respondents are asked to make social or cultural judgments of peers, some responses may contain a "*perceived acceptable response, even if not true*". This tendency is known as "*social desirability bias*" and this research has attempted to account for it. The limitation of the approach is the inability to generalise Kuwait-specific cultural factors for the industry-wide project management practices.

For dealing with threats and biases, the researcher defined the content of measurement and dimensionality. Content includes factors that influence project management practices and dimensionality involves avoiding double-headed items such as agree or disagree. The key to determining the validity of the research process and findings, researcher must understand the process itself. Additionally, research, process must use tools that are well established in the qualitative research investigation. The researcher of the present study, as shown in chapter three, has devolved into a full understanding of the research process and the tools employed. The researcher has also ensured that the instruments being used in the present research, such as semi-structured interviews, have met these key principles. Reliability, on the other hand, is in the ability to relate items on the data collection instrument to the phenomenon. The limitation of the approach is the inability to generalise Kuwait-specific cultural factors for the industry-wide project management practices.

4.10 Summary of the chapter

Informed by constructivist and pragmatic worldviews for research design, the researcher selected case study research as the research design method to answer the proposed questions in Chapter one. Being embedding within the KUCIS, the researcher reviewed IS project management practices in real-life situations to understand the phenomenon. The researcher also used semi-structured interviews with 23 stakeholders (as specified in in tables 4.2 and 4.3) in KU to further investigate Kuwait-specific cultural factors influencing IS project management practices. By looking at the phenomenon from several angles, the researcher endeavours to create a three-dimensional image of the phenomenon. The advantage of the approach is an in-depth analysis, providing the researcher the ability to squeeze out every bit of insight on the phenomenon.

This chapter describes the case study as the selected research methods along with data collection procedures and techniques for this research. It aimed to present the main principles and practicalities of qualitative data analysis, with emphasis on pattern analysis as a chosen qualitative data analysis technique for the present work. This chapter discusses and justifies qualitative data collection techniques, the applied procedures and the evaluation criteria determined by the research methodology. This research focuses on the interpretation of the text as the interviews are recorded and selectively transcribed.

In this chapter a detailed description of the adopted data collection techniques that are mainly used for the case study method. The benefit of field studies along with the data gathered through 23 semi-structured interviews has also been discussed. The secondary data collection source (i.e. archival documents) has also been considered in this chapter.

In addition to this, the different procedures for the gathering and investigation of data have been discussed along with the overall procedure applied by the researcher in collecting and analysing the data for this case study research. The researcher endeavours to provide justification for the decisions taken in the selection of the

sampling technique, key participants, multiple data collection sources and the choice of thematic analysis as qualitative data analysis approach. The various theoretical approaches to qualitative data analysis and the application of the thematic data analysis have also been discussed.

The following chapter presents in detail a profile of the State of Kuwait, followed by a presentation of the research findings acquired from the case study of the implementation process of the two IS projects in KU.

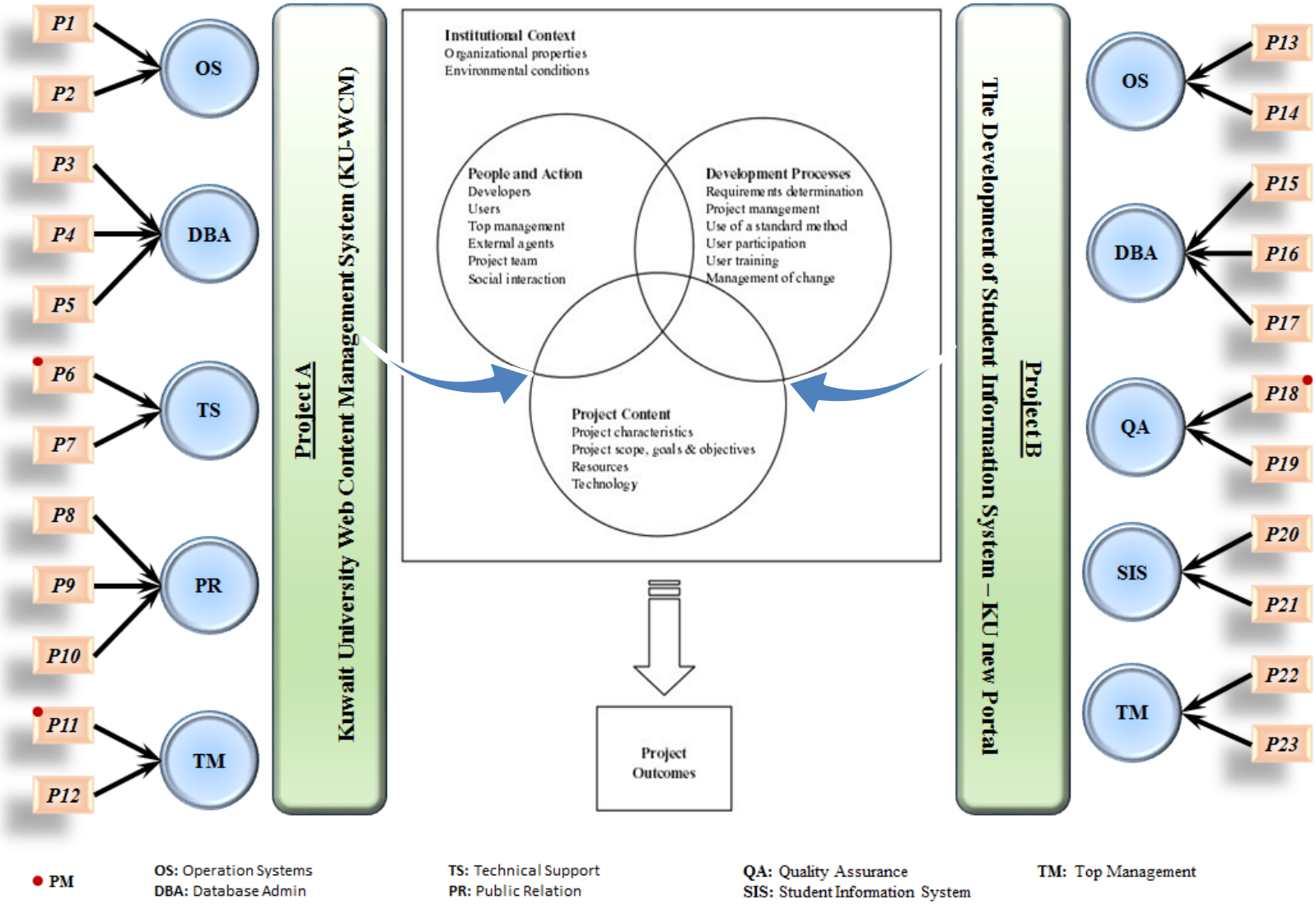
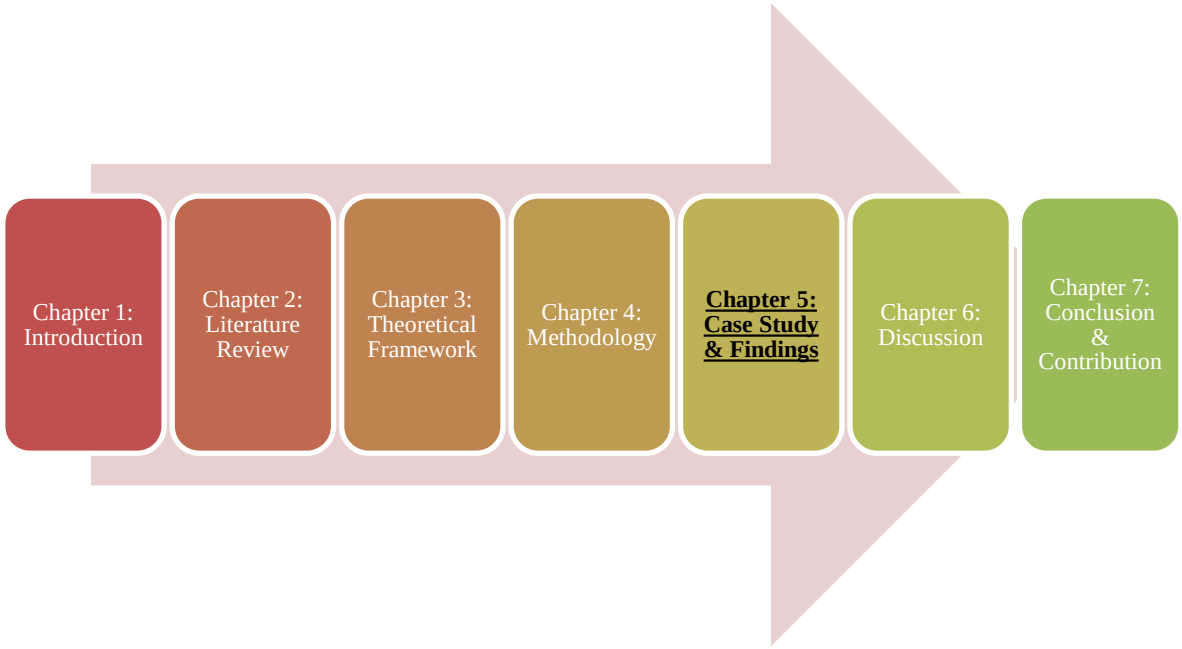


Figure 4.5: Summary of data collection

CHAPTER FIVE



5. CASE STUDY AND FINDINGS

5.1 Outline of the chapter

This study employs the in-depth case study method for gathering evidence. This method is considered to be appropriate in view of the exploratory, theory-building nature of the investigation, in particular, its focus on a contemporary information systems issue, and the relatively understudied research area. The research has been inspired by collaborative practice research by interviewing the team members of two of the main IS projects that were conducted during the last strategic plan of KU.

This chapter aims to test and validate the proposed conceptual framework for the implementation of IS projects in KU. Empirical data collected from a single case study of two IS projects are described and analysed into two stages. First stage is to understand the implementation phases of the two IS projects and the role and relationship of their stakeholders during the implementation. Stage two is to identify critical factors that affect the outcome of each implementation project from the perspective of those stakeholders responsible for installing them based on the scheme of McLeod and MacDonell framework.

The current chapter outlines the data collection techniques and methods of the research. Basically, the core contents of this chapter fall into two major sections. The first part provides a descriptive country profile of the State of Kuwait before lensing on the case study of the two projects. The second part of the chapter, presents the key data collected from the conducted survey of the current study. The analysis of the findings is based on the framework of McLeod and MacDonell (2011). It highlights the relevant critical factors that had an influence on the outcome of the two selected projects.

5.2 Deep insight into the Kuwaiti context

In chapter one, this research provides an overview on the profile of Kuwait. This section discusses in more details some specific issues within the Kuwaiti context and relevant to the research topic. The following section helps in understanding the nature

of findings extracted from the field work of this study. It provides an in-depth understanding about the State of Kuwait from an exploratory perspective based on general facts. The following section presents the impact of different indicators of the country on the government organisations including its HEI's.

5.3 IS projects implementation in Kuwait: current state and challenges

The State of Kuwait has recently seen widespread growth in the past three decades, which also includes the IT sector. Due to government reforms to bring the private sector in economic growth, the demand of IT specialist, particularly in the education industry has been rapidly increasing (Khalfan, 2004). As the form of organisational governance in Kuwait tends to be more individualistic and primarily controlled by a highly-individualistic, manager-focussed hierarchy, the CSF-based approach can be deemed more suitable (Al-Malkawi, Pillai, and Bhatti, 2014). Yet, with an increasing integration of IT, the use of IS in Kuwaiti medium-to-large organisations is increasing.

A major challenge is the integration of user-sensitive-information in server-based systems where the access-control policies are generally flexible to allow access to multiple subjects (El-Bahey and Zeid, 2013). The current data protection law currently does not comprehensively cover the rights and privacies of users whose information is stored on enterprise web-servers. A Personal Data Protection Act (PDPA) was indeed passed in 2013. However, its wider implementation still remains at-large (PDPA, 2013). A number of data protection approaches have been proposed in the literature by Al-Fedaghi, Al-Saqabi, and Thalheim, (2008); Alatiqi *et al*. (1996) and Buabbas and Al-Shawaf, (2011), that report a substantial lack of IS integration particularly in the education, research and medical sectors. According to Abdulgafer, Marimuthu and Habib, (2010) and Saleem, Marimuthu, and Habib, (2012), despite a significant improvement in Enterprise IS (EIS), the majority of implemented systems utilise expensive IT infrastructure that is underutilised and suffer from high power and maintenance costs. Apparently, the consultants hired to implement EIS do not focus on these issues and the majority generally do not stay as permanent employees due to a

heavily expatriate-oriented Kuwaiti economy. In order to integrated Kuwaiti graduates in the IS/IT sector, the government of Kuwait has recently passed landmark bills to integrate women in national governance. However, the role of women in IT/IS still remains largely under-represented. This is despite the fact that the percentage of female graduates in computing have reached around 40 – 50% (El-Bahey and Zeid, 2013).

Despite the above-mentioned substantial improvements, implementation of EIS in Kuwait has largely been limited to oil (Harrison and Safar, 2004), pharmaceutical and medical (Buabbas and Al-hawaf, 2011), finance (Mostafa, 2010) and industrial sectors (Al-Salman, 2008). An earlier study does include an overview into the integration of modern curriculum by El-Sayed Noor (1984). However, the proposed methodology primarily focuses on workflow management and conceptual database design architectures and lack in terms of any concrete, large-scale information systems. Recently, a trend of IT/IS outsourcing has also changed the situation particularly in terms of loss-of-control and hidden-costs (Khalfan, 2004). Due to low costs of using IT/IS infrastructure from countries such as India and China, an increasing number of organisations are now reported to outsource their IS integration needs. The trend is however largely prevalent in private organisations whereas larger multinational firms are reported to have the majority of their information systems sourced locally (Abdul-Gader, 1997).

AlAdwani (2002a) presented a more empirical view of IS project performance research which divided performance into technical and "social interactionist" view. The former comprised of issues related to technology, tasks, and project-specific details whereas the latter focus more on the organisation itself, the people and the underlying processes involved. Based on this notion, IS research focussing particularly on the developing countries can be categorised into technical and management domains with each having its own set of CSFs. The research model presented is further elaborated in Figure 5.1.

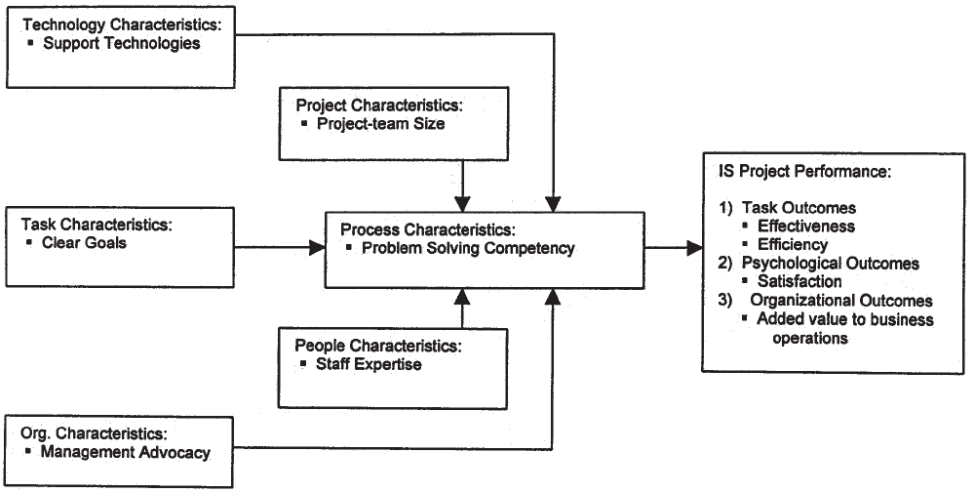


Figure 5.1: An IS project performance evaluation model by AlAdwani (2002a)

The integrated model presented in this research was further proposed via an empirical validation based on data from 84 US organisations (AlAdwani 2002c). The validation focussed on a number of critical goals which are also stated as CSFs in the majority of future research articles discussed later-on. These so-called "critical goals" included the quality of work produced, effectiveness of interaction with non-team members and adherence to schedule, budget and operations.

The above-mentioned model was further extended for the particular case of the State of Kuwait and examined the mediating effects of project planning on three main uncertainty variables of size, diversity and technical complexity of projects (AlAdwani 2002b). The model was validated using a field survey of 42 IT project leaders operating within the state of Kuwait. The evolved research model is thus shown in Figure 3.

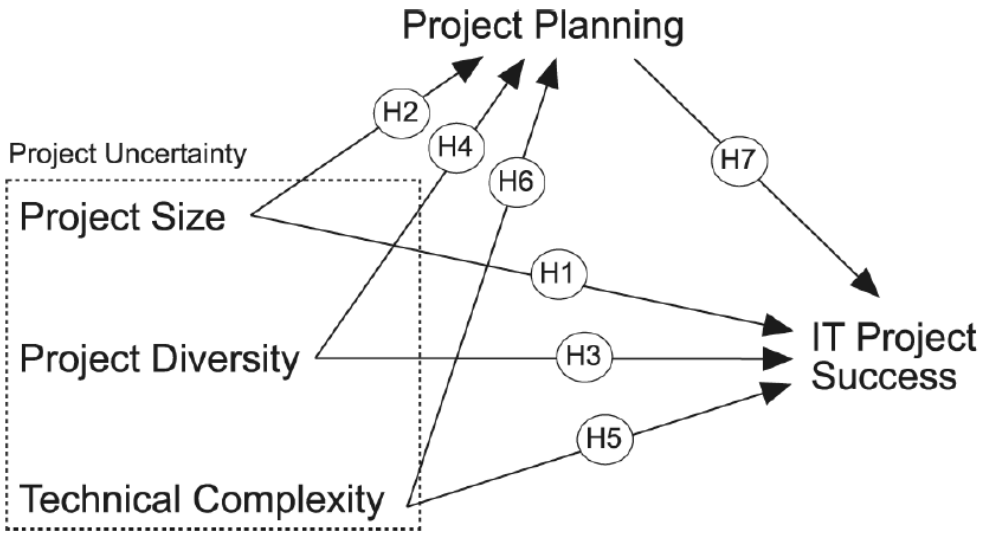


Figure 5.2 Research model given by AlAdwani (2002b) applicable to the case of the developing countries

The model thus shown in Figure 5.2 was evaluated in the context of the State of Kuwait. The outcome of work by AlAdwani (2002b) clearly made a case of CSF-based IS project management in tKuwaiti organisations as it reduced uncertainty and improved the understanding of IT project context. This approach also facilitated the adoption of task-oriented strategies to improve project control and thereby increase productivity.

The case study of Kuwait University forms a basis of the case presented by AlAdwani (2002 (a), (b) and (c)) based on the fact that ERP systems are increasingly and rapidly been integrated into Kuwaiti higher-education institutions. As the overall approach draws its description from the personnel driving and managing organisations, adopting the strategy will provide more control over the underlying academic process. These factors can then be drafted into a set of standards and best practices which can then be improved and tuned on the basis of experience and lessons learned. For instance, student productivity outcome based on increased investment in lab and classroom resources can be suggested by the executive level of the University. This can form part of a CSF best practice if it successfully meets the intended "student performance improvement" objective of the process.

5.4 The tendering process in Kuwait

As mentioned in previous sections, IS projects in the governmental sector in Kuwait are outsourced through a tendering process supervised by several state bodies, the most significant of which are the CTC, CAIT and SAB (CAIT, 2014; CTC, 2013; SAB, n.d.). The outsourcing process and its outcomes are especially important for the success of IS projects, given the significant risk factors involved in outsourcing and the relationship that results between outsourcing providers and users (Ang and Cummings, 1997; Barthelemy, 2001; Benvenuto and Brand, 2005; A. Khalfan, 2003; A. Khalfan and Gough, 2001, 2002; A. M. Khalfan, 2004).

According to Kuwait law, the governmental sector can acquire IS and/or outsource IS projects only through the tendering process that is mainly administered by the CTC (CTC, 2013; Euclid Infotech, 2012). Activities of the CTC include releasing and receiving tenders, holding auctions, awarding tenders and classifying or re-classifying contractors (CTC, 2013). As mentioned previously, despite the main goal of CTC being to reduce costs and combat corruption and favouritism, some of the evidence suggests that those goals are only partially achieved and through a very convoluted, bureaucratic and slow process (Al-Fares, 2000) that can be a significant risk to any IS project.

While the CTC handles the tendering process, the CAIT is focused on information technology policies and the supervision of e-government plans and projects (CAIT, 2014). As such, CAIT coordinates and supervises not only legal aspects relevant to IS projects in the governmental sector of Kuwait, but also socio-technological aspects such as public awareness of such projects, provision of technical training, selection and adoption of development and management methodologies (CAIT, 2006, 2014).

By contrast to both CTC and CAIT, the SAB has a broader scope in that it performs audits of governmental bodies and divisions. As such, SAB is meant as an additional safeguard of public funds and transparency, working together with audited organisations to ensure compliance with financial regulations and rules of Kuwait (SAB, 2012, n.d.). In particular, SAB is called upon to check and approve all agreements and contracts with value over one hundred Kuwaiti dinar (SAB, 2012).

Since most IS projects are likely to involve resources above this threshold, it follows that SAB is effectively involved in most IS projects in the governmental sector in Kuwait. Consequently, its rules and regulations as well as additional overheads imposed by detailed controls of every financial document are likely to impact the outcome of IS projects in the governmental sector in Kuwait.

5.5 The impact of cultural and legislative factors of IS projects in Kuwait

5.5.1 *Cultural factors*

When considering sociological and cultural factors that are relevant for IS projects in governmental settings in Kuwait, it is useful to consider the existing knowledge that indicates potential barriers to IT use and adoption in the Arab world due to mismatches between social and cultural assumptions that are embedded in IT that are directly imported from the non-Arab world (Leidner and Kayworth, 2006; Tan, 2002). In addition, even in the absence of such cultural conflicts, sociological and cultural factors are still considered crucial for the development, adoption and use of IS in a given context (Avgerou, 2013; Lawrence and Oivo, 2012; Leidner and Kayworth, 2006; Smit and Dellemijn, 2014; Tan, 2002; Thowfeek and Jaafar, 2010).

More precisely, social and cultural differences related to management and organisation styles have been identified as leading to unsuccessful IT use and policies in the Arab world (Al-Fadhli, 2009; Atiyyah, 1988; Tan, 2002). However, even within the Arab world, there are significant sociological differences between various countries (Al-Fadhli, 2009; Badran and Zou'bi, 2010; Kabasakal and Dastmalchian, 2001). Such differences are reflected in the observed impact on IS projects and the specific areas in which they are used in various Arab countries. For instance, Jordan used IT most successfully in areas related to the management of its cultural heritage, while Saudi Arabia aimed for a wide-scale adoption of IT but experienced mixed results in part because of failing to ensure full compatibility between the various IS deployed (Atiyyah, 1988; Goodman and Green, 1992; Tan, 2002). By contrast, there is comparatively less knowledge regarding concrete impact of sociological factors in

Kuwait on its IS projects implementation. However, there is evidence that the social environment is crucial for IS projects in Kuwait in a variety of areas, including both public and private sector organisations (AlAdwani, 1999, 2000, 2001, 2002a, 2002c, 2013; AlAwadhi and Morris, 2008, 2009; Al-Fadhli, 2009; Khalfan and Gough, 2002; Rouibah, 2008; Tan, 2002). The review of existing evidence points to three main sociological factors that are especially relevant for IS projects in Kuwait: preference for face-to-face interactions, the importance of connections or "***Wasta***" and cultural differences within Kuwait. The following sections shed the light on the key cultural issues with example-ready discussion.

5.5.1.1 Preference for face-to-face interactions

The preference for face-to-face interaction is reported as a characteristic of both Arab societies in general and Kuwait society in particular (AlAwadhi and Morris, 2008, 2009; Alshawaf, Ali, and Hasan, 2005; Kabasakal and Dastmalchian, 2001; A. Khalfan and Gough, 2001; Tan, 2002). Such preference can have a negative impact on IS projects on several levels. For instance, users may be more reluctant to adopt and fully use IS even when they are effective and easy to use (AlAwadhi and Morris, 2009). In addition, managers may also be less supportive of IS projects as they perceive them as leading to reduced face-to-face interaction and thus going against a strong cultural preference (AlAwadhi and Morris, 2008, 2009; Tan, 2002). In turn, such lack of support from management can easily lead to failure of an IS project, especially in Kuwait, where management support and management knowledge of IS has been shown to be a success factor for IS projects (AlAdwani, 2000, 2001, 2002a, 2002c; Alshawaf et al., 2005).

The preference for face-to-face interactions is especially relevant for IS projects in the governmental sector in Kuwait as it translates into a preference of users for a "*tangible relationship with government*" as opposed to the electronic one offered by IS (AlAwadhi and Morris, 2009, p. 588). Consequently, users in Kuwait may simply avoid using an IS regardless of its technical merits or effectiveness, simply because they strongly prefer to interact directly with government employees.

5.5.1.2 Importance of informal connections or "Wasta"

The importance of connections or "*Wasta*" refers to the significant impact of social networks in Kuwait and in the Arab world in general on business interactions. More specifically, *Wasta* is defined as "*a force in every significant decision in Arab life*" (Hutchings and Weir, 2006b, p. 275) and it is seen as both ubiquitous and a potential source of corruption and inequality in Kuwait (AlAwadhi and Morris, 2008, 2009; Hutchings and Weir, 2006a).

The impact of Wasta on IS projects is not fully clear. On one hand, the importance of Wasta in Kuwait can be a barrier to IS project implementation and use for initiatives that are seen to go against this strong cultural characteristic and potentially alter it. On the other hand, users may perceive IS systems as a unique opportunity to overcome barriers that they might encounter otherwise due to the importance of informal business connections (AlAwadhi and Morris, 2009). However, this lack of clarity with respect to actual impact is reflected in the contrasting views of users who note that they expect Wasta to be present even in IS projects deployed in governmental settings, although they would welcome the opportunity of eradicating corruption and decreasing inequality (AlAwadhi and Morris, 2009). Furthermore, this cultural element is dominant in the Arab culture as a result of primacy for face-to-face interaction and communal behaviour of middle-eastern society.

5.5.1.3 Cultural heterogeneity of Kuwaiti Population

Another factor that is quite specific to Kuwait refers to the cultural heterogeneity of people in the country: as many as two thirds of people in Kuwait are non-Kuwaitis from diverse backgrounds including Egyptians, Bangladeshis, Syrians, Pakistanis, Filipinos, Sri Lankans, Ethiopians, Jordanians, Palestinians, Nepalians, Iranians, Lebanese, Indonesians, Iraqis, Afghans, Americans and Yemeni (Kuwait Government, 2014; WPR, 2015).

This diversity of population makeup means that users of IS in Kuwait are not a single cultural group, but rather a set of groups with potentially different requirements, conventions and preferences. Consequently, a significant success factor for any IS

project in Kuwait is its early and explicit consideration of this cultural diversity of the targeted user base. This is confirmed by existing studies that report on the need to design IS so that match the requirements and cultural norms of various groups within a country, even when such groups are very diverse as they are in Kuwait (AlAwadhi and Morris, 2008; Tan, 2002; Thowfeek and Jaafar, 2010). However, the same study also notes that this internal diversity makes users more open and flexible in their interactions and cultural expectations (AlAwadhi and Morris, 2008). Based on this discussion, we highlighted the necessity of the Kuwaiti legislation that shape the interaction between these segments of society and enhances their heterogeneity.

5.5.2 Legislative factors

Main legislative factors impacting IS projects in the governmental sector in Kuwait are related to laws, rules and regulations that govern the way in which IS projects are purchased or outsourced. More precisely, Kuwait uses a central tendering system implemented through the Central Tenders Committee (CTC) (Al-Fares, 2000; CTC, 2013; Euclid Infotech, 2012). In addition, expenditure of public funds is regulated and controlled through the activity of two other bodies, namely the Central Agency for Information Technology (CAIT) and the State Audit Bureau (SAB) (CAIT, 2014; SAB, n.d.). The common objectives of those three main bodies are *to ensure effective use of public funds and a fair and transparent IT outsourcing and acquisition process*, as well as *effective planning and deployment of e-government projects* (CAIT, 2014; CTC, 2013; SAB, n.d.). However, there is evidence that the current state of practice is different, as the system exhibits three main factors with a negative impact on IS projects: excessive bureaucracy, regulatory roadblocks and potential administrative corruption. Such rigidity creates a bureaucratic environment for IS projects in Kuwait. It is worth noting that both of "*Wasta*" and "*underthought legislation*" have created particular regulatory roadblocks that are discussed in the next section.

5.5.2.1 Regulatory roadblocks

One significant regulatory roadblock in the State of Kuwait is due to existing and long-standing policy divisions within the country's parliament (National Assembly) and

government. Such policy divisions are reported to act as roadblocks since they increase the time required for IS projects to obtain approval. Moreover, they can effectively stall some initiatives (Al-Fares, 2000; Madar Research Group, 2003). Combined with the previously discussed bureaucracy issues, such policy divisions mean that IS projects in Kuwait are likely to take much longer than initially planned, thus potentially failing or being abandoned as unfeasible or unproductive.

Another potential roadblock is the CTC's low-cost policy. More precisely, the low-cost (cost-focused) policy means that the CTC always aims to award a project based on the lowest cost quoted (Al-Fares, 2000; CTC, 2013). However, this policy is a potential roadblock for IS projects in the governmental sector in Kuwait as it forces bidders to lower their quotes even at the expense of quality of the system provided (Al-Fares, 2000). This can result in higher costs in the long term (Al-Fares, 2000) and it is a potential factor affecting the success of IS projects in the governmental sector, since an excessive focus on reducing costs means that significant but costly issues such as sociological factors and requirements may be overlooked.

5.5.2.2 Excessive bureaucracy

A study of CTC's current role and functioning in Kuwait revealed that most of those involved (including, CTC employees, suppliers, customers and clients) consider it to be highly bureaucratic and inefficient, mainly as it imposes long procedures and often acts as a roadblock (Al-Fares, 2000). More precisely, respondents revealed that procedures often take more than one year and involve many manual activities that are unproductive and ineffective, such as stamping, obtaining signatures and providing an excessive number of hard copies of a large amount of paperwork involved (Al-Fares, 2000). In addition, evidence shows that this excessive bureaucracy leads to significant cost increases due to a lack of flexibility which forces acquisitions at higher prices due to shortfalls (Al-Fares, 2000).

Such excessive bureaucracy is considered to be at least in part a result of the outdated model of CTC that does not allow it to handle the current amount of work it has. The CTC has been founded in 1976 and updated through newer laws passed in 2005, 2008

and 2010, respectively (CTC, 2013). However, although the CTC was initially effective in highly reducing public money expenditure, it gradually became too bureaucratic and unable to handle the significantly larger number of tenders that it receives (Al-Fares, 2000). For instance, despite the recent updates, the CTC still specifically stresses the fact that it does not accept documents in electronic format, requiring instead manual and physical delivery through sealed envelopes (CTC, 2013).

In addition to the above, the State of Kuwait has also created in 2002 the Central Technical Committee for the Implementation of E-Government, as a coordinating body for implementing the country's E-Government initiative (Madar Research Group, 2003). However, similar to the CTC, this committee is also reportedly slow and bureaucratic, leading to slow implementations of IS in the governmental sector in Kuwait compared to its neighbouring countries such as the UAE (Madar Research Group, 2003). A measure of the bureaucracy involved is perhaps the creation of yet another body, the Secretariat for the Central Technical System, tasked specifically with overseeing the tendering of contracts related to E-Government (Madar Research Group, 2003).

5.5.2.3 Potential administrative corruption

While the CTC has been specifically created as a means to combat potential administrative corruption and over expenditure of public funds, recent investigations suggest that success in this area is only partial. More precisely, CTC employees, clients and suppliers provided feedback noting that the procedures of CTC have little impact on actually avoiding corruption (Al-Fares, 2000). In addition, more recent studies provide evidence of concrete patterns of corruption in the public sector in Kuwait, despite some positive impact of E-Government on reducing favouritism, nepotism and bribery (Al-Hussaini, Al-Mutairi, and Thuwaini, 2013).

5.6 The case of Kuwait University – Centre of Information System (KUCIS)

As mentioned in the previous chapter, the nature of the case study is based on two embedded cases of IS projects that has been implemented at KU during the last

strategic plan by its CIS team. The following section presents general background about the HEI in the public and private sectors in Kuwait. Moreover, shedding light on the KU strategic plan and its objectives in term of IT development in order to discuss the implementation of these projects help meeting the objectives in the next chapter.

Each case deals with different resources of KU through a single body (KUCIS), which delivers a consistent level of services across the university. The CIS has experienced multiple IS projects running as a result of the KU strategic plan. The case study is a good example of the challenges posed by stakeholders' interaction during the implementation of the IS projects. It shows how and why IS projects can be successful or unsuccessful. It also illustrates on the factors that influence the outcome of those projects. The themes of the two projects are basically adopted from the framework of (McLeod and MacDonell, 2011): (1) People and Action, (2) Development Process, (3) Project Content, and (4) Institutional Context. After discussing the two projects of the case study in this section, the findings that relate to the factors affecting the outcome of IS projects are presented in following section and shedding the light on the challenges KUCIS tackled during the implementation of the two projects and how they influenced on the outcomes.

Since the two selected projects of ISD implementation were conducted at KU by its CIS team, the main focus of this section illustrates on KU as the core context of this case.

5.6.1 *The governmental academic institutions in the State of Kuwait*

5.6.1.1 The Public Authority for Applied Education and Training (PAAET)

Based on the State's conviction of the importance of technical and vocational education in the national development process, the Ministry of Education (MoE) established PAAET as the only training institution in the country. It aims to increase the national technical manpower and to meet the country's human resource needs though its two sectors; education and training. In addition, it aims to increase the attention towards training programmes offered for the females to encourage them to participate in the

progress of the country. PAAET include five main colleges and ten training institutes along with two special training centres. These programmes lead to 4-year bachelor degree or 2-year diploma.

Also, the PAAET conducts in-service training, continuing education programmes and community service. All such educational services are offered throughout its colleges, institutes and training centres. Currently, there are more than 39,000 students enrolled at the PAAET colleges and institutes. The number of faculty members in the college is 2,082 and the number of training staff in its institutes 1,141.

5.6.1.2 Kuwait University (KU)

Kuwait University established in 1966, as the first public research university in the State of Kuwait. On the other hand, the PAAET is the second governmental higher education institution in Kuwait, which was established in 1982. In recent years, the government has also encouraged the growth of private education in the country, mainly to cope with a substantial increase of Kuwaiti students' number. The goals of establishing these universities were set to develop technical manpower within Kuwaiti citizens and to meet human resource requirements of the country through its two sectors; education and training (UNESCO, 2008).

The college of Arts, Sciences and Education and the College for Women were both established five years after the independence of the State of Kuwait in 1961. These colleges formed the core of Kuwait University with 418 students and 31 faculty members (Kuwait University, 2000). These figures have steadily grown and expanded to 19,001 enrolled students by the academic year 1999/2000. Currently, the number of the enrolled students, both undergraduate and postgraduate, has jumped to reach 40,000 along with 1,565 faculty members in the academic year 2014/2015. Kuwait University is currently consisting of 17 colleges and 10 general service and work centres that are all distributed over 5 different campuses. At the moment, with about 5,000 students graduating every year, KU has more than 100,000 alumni serving the country and the region. The 17 colleges of KU are currently offering 76 undergraduate and 71 graduate programmes (Kuwait University, 2015).

The university has seen its enrolment grow from about 418 to 40,000 students, faculty from 31 to 1,565, colleges from 4 to 17, and administrative and academic support personnel from 200 to more than 5,000. Kuwait University has more than 100,000 alumni serving the country and many of them have attained prominent positions in different important institutions in the public and private sector, across the country and internationally.

Administratively, and the fact that it is a public university, KU is located within the responsibilities of the Ministry of Higher Education (MoHE) of the Kuwaiti Cabinet. The Supreme Council is considered the highest administrative authority of KU chaired by the university's President (Rector), which is the executive head of the university. KU executive powers are vested in the President, and is responsible for its scientific, intellectual, technical, administrative and financial affairs.

The sphere of KU Presidential responsibilities finds expression in five main offices, namely Academic Affairs, Academic Support Services, Research, Health (Medical) Sciences, and Planning; each is headed by a Vice President. The General Secretariat of KU, an arm of the institutional administrative affairs, is another executive office and headed by the Secretary General. The Secretary General, together with the five Vice Presidents, constitutes KU's senior leadership and executive authority. Under the responsibility of each of these executive offices there are several departments and service centres, and the deans' offices (see Figure 5.3).

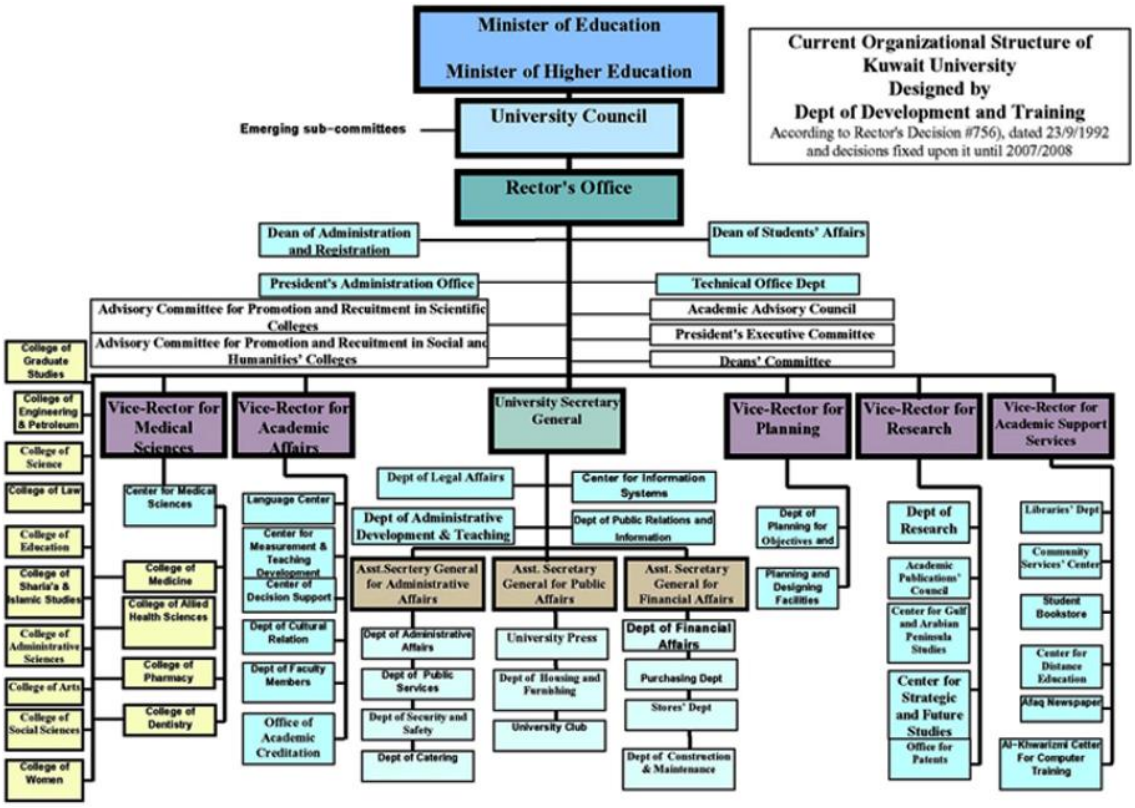


Figure (5.3): The Organisational Structure of Kuwait University

According to the Data Centre of the UNESCO Institute for Statistics (UIS), Kuwait has the highest literacy rates in the Arab region and has been listed as the top Arab country for its literacy rate in 2007 (Table 5.1).

Table 5.1: Adult literacy rate in the Arab States

(United Nation Educational, Scientific and Cultural Organisation 2009)

Adult literacy rate (%). Total - 2007	
Kuwait	94.5
Palestinian	93.8
Qatar	93.1
Lebanon	89.6
Bahrain	88.8 (**)
Libyan Arab Jamahiriya	86.8 (**)
Saudi Arabia	85.0 (**)
Oman	84.4 (**)
Syrian Arab Republic	83.1 (**)
Tunisia	77.7 (**)
Algeria	75.4 (**)
Yemen	58.9 (**)
Mauritania	55.8 (**)
Morocco	55.6 (**)
Djibouti	...
Egypt	...
Iraq	...
Jordan	...
Sudan	...
United Arab Emirates	...

... Data not available
** UIS estimation

5.6.2 The private academic institutions in Kuwait

In accordance with the constitution of the State of Kuwait; and in consideration of law no. 29 for year 1966 in regards of regulating the higher education (the law of establishment of Kuwait University) and its amendments and law no. 63 for year 1982 for establishing the Public Authority for Applied Education and Training (PAAET), the Emir of Kuwait has ratified and promulgated the law no. 34 for year 2000 passed by the

Kuwait National Assembly for the establishment of private universities in Kuwait. Nowadays, there are 5 universities and 12 colleges that belong to the private sector with an overall number of 20537 registered students until the academic year 2012-2013 (PUC website, 2016).

In order to ensure conformity with all rules and stipulations for licensing and managing private educational institutions, the Ministry of Higher Education formed the Private Universities' Council (PUC).

PUC is a government organisation chaired by Minister of Higher Education and membership of 8 expertise that are specialised in higher education of those who shall have no direct or indirect contribution to any educational institution throughout the period of their membership. The 8 members are appointed by the Council of Ministers of Kuwait government upon the presentation of Minister of Higher Education. Membership is extended for a period of three years and it is subject to extension (PUC website, 2016).

5.6.3 *Kuwait University strategy*

The strategic plan of KU is set by the government. The President of KU oversees implementation and application of legislations, laws, bylaws and the University Council's decisions. Moreover, the President of KU supports the institutional development through policies and regulations, on short and long-term strategic plans, geared to consistently match the government vision.

KU main vision aspires to be a national leading university and well recognised for excellence in higher education and scientific research. In order to pursue this, KU sets their mission to be committed to prepare excellent human wealth armed with knowledge to meet the requirements of the development of the State of Kuwait'. KU committed to provide high quality education, achieve excellence in scientific research, and attain advancement of community service to keep up with the pace of modern life.

5.6.4 Kuwait University plan and objectives

5.6.4.1 Kuwait Strategic Plan

The strategic plan of KU determines its overall objectives in a unified framework and organises the priorities through the future vision into a set of a clear developmental targets in terms of quantity and time. In order to achieve the highest ranks as a HEI, KU top management insures the availability of sufficient human and financial resources that help attaining such vision, and guides all KU administrative departments and work centres to move toward that direction in order to push the wheel of the country development forward (KU Strategic plan, 2006/2007).

The KU Vice President for Planning Office is the administrator of the corporate planning process in KU. The office prepare reference guides for the university's work-centres to use during the implementation of projects in order to keep the outcomes within a unified framework of goals. It also helps to facilitate the evaluation and follow up process until they reach the desired end.

Prior to 2011, Kuwait University used to have two different forms of plans. A *Long-Term Strategic Plan* that reflects KU's vision and missions need to be achieved in the forthcoming 20 years. The current ongoing *Strategic Plan* (2005 – 2025) comes with a set of 4 milestones of *Development Plans* every five years (short-term plans) in order to assess the progress of the *Strategic Plan* and assure that its objectives are met.

The Strategic Plan for Kuwait University consists of multiple areas of interest; however, what matters this research is the area that serves the development of information technology:

The five-year development plan of KU strategic objectives for the period from 2005/2006 – 2010/2011 aimed to improve the quality of productivity and provided services, based on the following:

1. The development of academic programs and the improvement of quality of education in the university.

2. Construct multi-skills graduates that are able to keep pace with progress along with the improvement of KU academic staff to achieve excellence in the areas of teaching.
3. The development of KU research projects that contribute to the resolution of the problems and challenges that the country face, and the employment of these scientific research outcomes and market them locally and globally.
4. The development of an integrated system of advanced training courses, management and technical consultation, and scientific studies in order to serve individuals and organisations in the community.
5. The development of an integrated system for the use of technology in teaching and learning process.
6. The development of the current campus sites to increase the integration of facilities and work centres to serve the educational process, along with the development of the structural prototyped plan for the new University City in Shedadiya area.

In order to keep up with the rapid change and progress of science and information in recent years, and enhance the role of technology in education, KU ensured to list the projects that contribute in (the developments of an integrated system for the use of technology in teaching and learning process in higher education); one of the largest development projects implemented by more the one sector at Kuwait University. In addition, the implementation of another four projects in technology; Paperless Government Project, the project of redesigning the electronic Student Information System gate, Update the e-portal system services at Kuwait University and Human Resources Management System Project (KU-VPP).

5.6.5 The Centre of Information System (KUCIS)

The Centre of Information System (CIS) of KU was first established in 1971 as a Computer Service centre that oversees the computer resources and technological operations within the entire University. The computer centre was later renamed to the Kuwait University - Centre of Information System (KUCIS) and has become in charge

to develop and implement the technological aspect of the general plan of KU. KUCIS is also responsible for the provision and the management of the computing facilities and it provides technical services. KUCIS supports the computerised systems and network throughout colleges, departments and service centres. Moreover, KUCIS is in charge of developing the technical skills of the employees and provide training courses for the use of any new IS.

KUCIS provides students, faculty and staff of Kuwait University with state-of-the-art computer networks, workstations, and computer-related services. Nowhere is this more apparent than in the earlier Computer Centre.

KUCIS main aim is to develop and implement a general plan for KU to improve the quality of its IT infrastructure, which includes all computing facilities and technical support. KUCIS consists of three major technical departments; the Management Information Systems (MIS), the Communications (COM) and the Technical Support (TSD); along with 2 administrative offices; the Technical Office and the Administrative Organising Office. Each department is divided into specialised technical sections as follows:

- ***MIS:*** Student Information System Section, Finance and Administrative Systems Section, and Academic Systems Section
- ***COM:*** Networking Section, and IT Security Section (for the local network)
- ***TSD:*** Technical Development Section, Operating System Section, Database Section, and Customer Services Section

During the period of conducting the two projects under study in the current research, the supervision over the KUCIS swapped between the Vice President for Academic Support Services and the university's Secretary General Office. The KUCIS was originally located within the administrative coordination and supervision of the KU Vice President for Academic Support Services Office. However, the supervision of the KUCIS was shifted to be under the direct responsibility of the Secretary General Office in KU after promoting the director of KUCIS to the post of Secretary General in order

to keep the KUCIS projects under his supervision. But later KUCIS was shifted back again to the responsibility of Vice President for Academic Support Services.

5.7 Project (A): KU Web Content Management System (WCMS) - Phase I Project

5.7.1 Background

A Web Content Management System (WCMS) is a software system that provides users with little knowledge of programming to control, update, manage, edit and audit website content with ease. Also, it provides a user-friendly interface that allows authoring, collaborating and administrating a website, and provides them with the ability to manage contents and output for multiple author editing and participation.

The WCMS is a system that allows an overall website consistency and reliability, and achieves common branding. It helps to keep information on the websites flexible up to date using current repositories. KU-WCMS uses a central metadata system to allow the search of all pages of KU website. This system allows website content production without the need of programming or design experience. KU-WCMS decentralises maintenance and allows content scheduling. This project is considered to be the first phase of a series of other phases which each will be planned as separate projects in the future. The current phase was targeting to cover only KU main website.

5.7.2 Problems identified with the old KU websites (replacing old legacy system)

Referring to our discussion of the project context, two dilemmas have been pointed out in the organisational layout of Kuwait University. First, the decentralised approach of implementing the project and developing the website at the University level. Second, the lack of control over the technical development of individual systems within the KUCIS (i.e. divisional web-interface, payroll, and emailing systems). These two factors resulted into a haphazard development, inconsistent navigation, and frequent

replication of information on several pages within the University's website as technical sub-system.

For instance, the KUCIS has been founded with a purpose of managing the overall systems' implementation and assures that other divisions have synchronised versions of e-mailing system (e.g. ZEMBRA) could not enforce other divisions and schools to buy and implement the same system. In the Old Legacy, every school had their own specialised IT team who decides what to be bought and the implementation process should proceed.

Such a context highlights the lack of a centrally agreed plan of website development. Further evidence has been found, "*Our KUCIS simply failed to use ZEMBRA email system in all of their functional colleges and departments. Yet, some members use the Microsoft Exchange System. Clearly, their control over other division and schools will be at low level when it comes to unify all the different websites.*", Said by IT officer in the KUCIS (P13).

The websites' contents which were created with different HTML editors. The numerous numbers of links and the lack of bread-crumbs trail were the reasons behind the inconsistent navigation of the web pages. In addition, editing and changing the contents of the web pages in the old system required a lot of manual effort and this caused frequent replication of information that can be seen in many web pages. Consequently, a decision was made to design a new website with a system with more dynamic tools for website management.

5.7.3 Mission Statement and Goals

The main mission statement and goals of the implementation of the new system is to provide the following:

1. ***Improve flexibility, speed, and ability to cut costs:*** The new WCMS requires only a web browser, and it is simple to learn and easy to enter/edit contents (using WYSIWYG/HTML editor for entering content - Site Studio).
2. ***Enhance overall consistency and reliability:*** The WCMS imposes standards for consistent presentation thru use of design templates, and Cascading Style Sheets (CSS to unify the look and feel of all pages of KU website. Also, improves the relevance of content by using metadata to automate linking.
3. ***Improve navigation:*** The WCMS adds navigation bar, bread crumbs, and improved link management.
4. ***Ability to distribute responsibility and increase the number of content creators:*** The WCMS defines Roles for individuals: (Content Entry / Editor / Publisher), as well as, defines Workflows by assigning tasks according to the Role.
5. ***Dynamic management of content:*** The new WCMS allows content to immediately get updated when published. It also provides reusable content blocks to reduce replication. Moreover, it features a life-cycle management tool that allows to define the duration of content is available. The WCMS provides version control, which gives the ability to roll back to a previous version of the page.

5.7.4 KU main website design and solution architecture

This project consists of the design of the new KU website and KU-WCMS architecture. It was agreed on the new KU main website design (Figure 5.6). The design includes main, college and sub-pages layout in Arabic and English. A comprehensive solution architecture was agreed on which includes servers, software components, network and security requirement for test, contribution and consumption environments. It was also agreed to convert the new design to sliced HTML and CSS files. Moreover, a test contribution environment that is identical to the production contribution environment was set up including installing and configuring the basic required components.

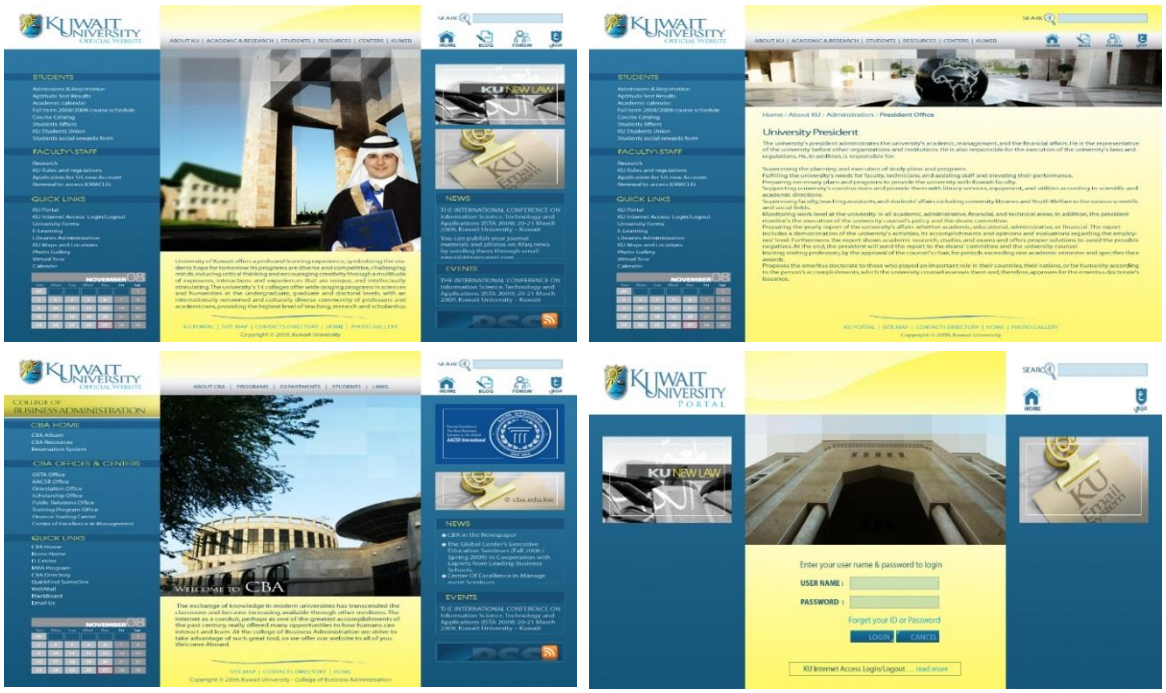


Figure (5.4): KU main website design

5.7.5 The architecture of KU-WCMS

According to the Requirements Definition and Design document of the project, the requirements for this system was developed based on input from: (business analysis workshops, functional workshops, scope of work, meeting minutes, and finally modifications and updates requested by KU). The architecture of KU-WCMS includes servers, software components, network and security requirement for examination, contribution and consumption environments (Figure 5.7). The major components of the system are verified as follows:

1. ***Consumption servers (or deployment servers):*** are servers that function to deliver web content to content consumers. They are the servers that content consumers access directly when they want to view content.
2. ***Contribution servers:*** are servers that users access with the appropriate permissions to check in new content or revise existing content. These servers are usually located inside a firewall.

3. ***Database server:*** is used to store the metadata of all revisions of all the content. It also stores a wide variety of other Oracle-related data, including the user profiles, and workflow definitions.
4. ***E-mail server:*** is primarily used in workflows and subscriptions.
5. ***LDAP server:*** is a system used for user authentication.

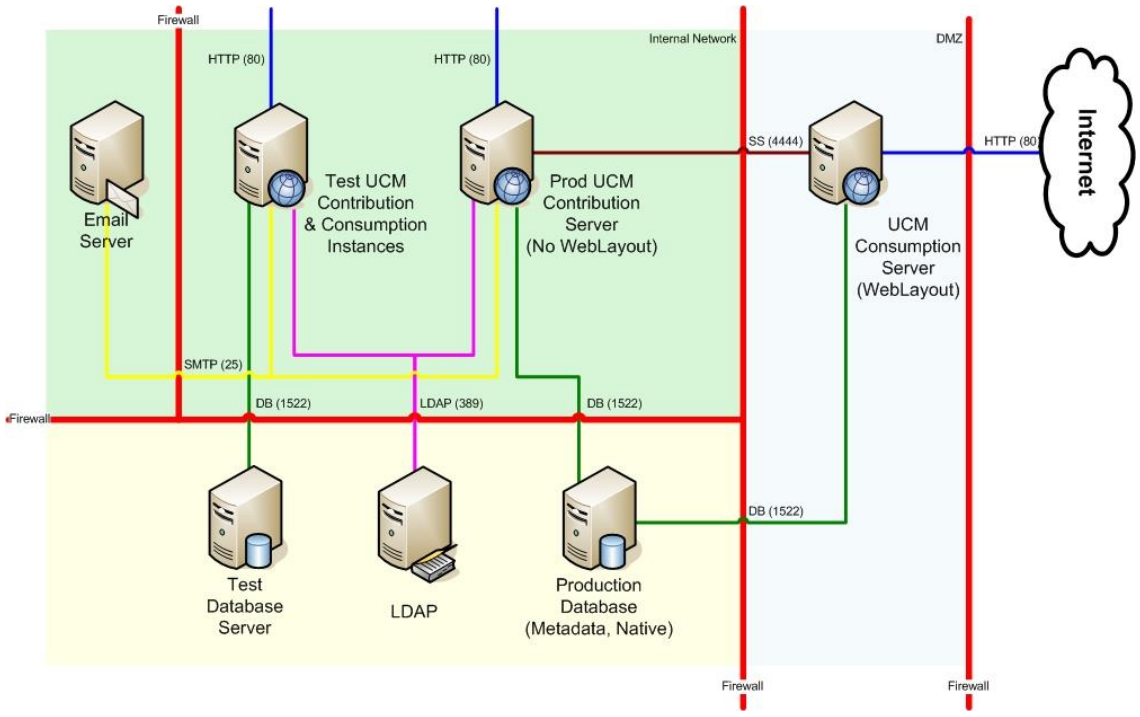


Figure 5.5: Architecture of KU-WCMS (KU-CIS, 2010)

5.7.6 Users' types and roles in website publishing

Access to the KU Web Publishing system is controlled by the software Security Groups Framework (SGF). The system can only be accessed by an authorized user, and user's permissions are determined by an assigned role within a website. All the new websites (colleges, academic departments, KU administrative department and library) are created as sub-websites of the main KU website (see Figure 5.8).

The web publishing roles, which are assigned to individuals are:

- ***Consumers (of information)***: are those users who access the content server through their web browser to search, find, and view files. They cannot insert new content into the Content Server. Typically, the majority of users are consumers.
- ***Contributors***: are those users who are authorised to access and update content. Contributor typically have a page authoring access, but this will be limited to the main content, or portions of it.
- ***Website managers***: are users with privilege to make changes in the website hierarchy. They can also change the layout of the web pages assigned to a section and modify website properties.

- ***Website team***: are basically the Website (or simply web-developers) Developers, Webmasters, Website Administrators, and Sub-Administrators. The web-developers and webmasters are authorised to create custom components to modify Content Server's standard functionality. While website administrators are allowed to set up, maintain, and modify the configuration of the CMS and its user logins.
- ***Content approver***: are those users who have been given the authority and the responsibility of approving a web page content that are created by other users. The compliance team is responsible for contrasting the provided information against the pre-set forms and regulations.
- ***CMS administrators***: are those users who can manage the entire web publishing system. The members of the CMS administrator user's group have the widest set of permissions. CMS administrators are responsible for creating websites, adding new users, and defining user groups. The CMS administrator defines security settings for sites, as well.

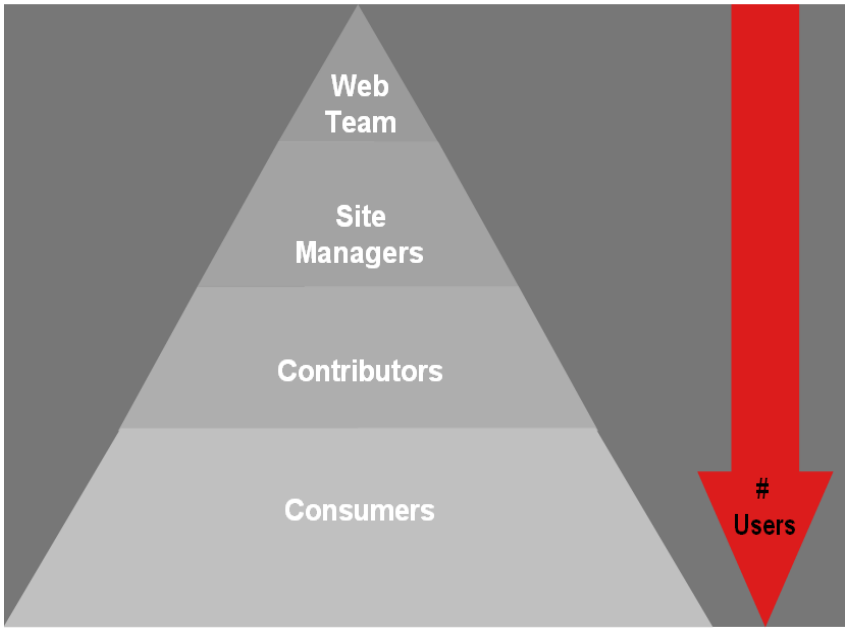


Figure 5.6: KU-WCMS users' roles for website publishing

The development, administration and management of the website content, including the webpages, web-media and web-data, which represent the sole responsibility of the corresponding department in KU. Automated content approval workflow allows distributed management of website content and centralised control of content publishing. When content changes are made and the page is checked in, the system sends automated email notifications to approval assignees. Assignees can publish content changes, forward them to additional assignees or send back changes for rework.

5.8 Project (B): The Development of Student Information System (KU new portal system)

5.8.1 Background

A Student Information System (SIS) is an Enterprise Resource Planning system (ERP) used in the education sector, mainly in higher education, to manage student data. The SIS development project at KU was motivated by the need of performing more than 30,000 students' registration transactions effectively, provide an effective electronic guidance, provide a course schedule that meets students' requirements, achieve the

recommendations of the academic accreditation bodies and raise the level of system performance. Therefore, there was a need to change the registration process mechanism and install new servers that are capable to perform more effectively and efficiently processes.

As the number of students at KU keeps expanding, the SIS needed to expand its capability to have more channels to connect and integrate. This system also has larger volumes of data to manage. Core systems like the SIS must become seamless and underpinned by fast data processing. Based on all these requirements, KUCIS decided to implement the Oracle WebCenter as its new portal, as well as, Oracle Application Development Framework as the backend system.

5.8.2 Oracle WebCenter 11g

Oracle WebCenter 11g (also called Oracle WebCenter Portal) is a web-based platform that is used for creating intranets, extranets, composite applications, and self-service portals. Oracle WebCenter offers a more secure and efficient means for the users to consume information and interact with applications, processes, and users.

- Create and manage role-based portals for desktops, tablets, and mobile devices.
- Leverage a pre-built library of reusable components.
- Use a comprehensive yet flexible set of development tools for building and deploying custom built components.

The WebCenter Suite for KU supports the latest Java User Interface (UI) standards and it introduces a new platform for user interaction that combines the best of: Portals (portlets, customization), and Rich Client Development frameworks. KU WebCenter works as a foundation for Fusion Applications (Figure 5.9 and 5.10).

Oracle WebCenter at KU targets to the achievement of three major themes. The first theme aims to Empower Information Workers by offering: self-service communities, personal spaces, and enterprise-ready Web 2.0 services for both social networks and personal productivity. The second theme aims to Empower Business Users by supporting: runtime page creation, composition and customization, and application

configuration. The third theme aims to Empower Developers by providing: ready to use components for application assembly.

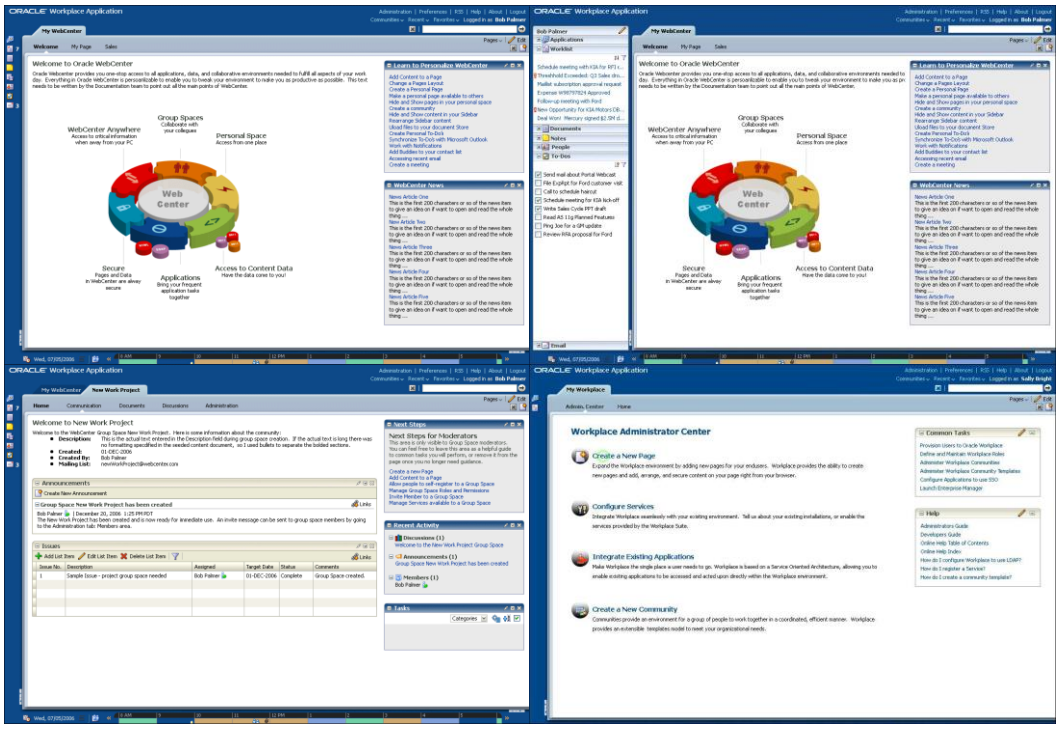


Figure 5.7: Oracle WebCenter layout for KU (KUCIS, 2010).

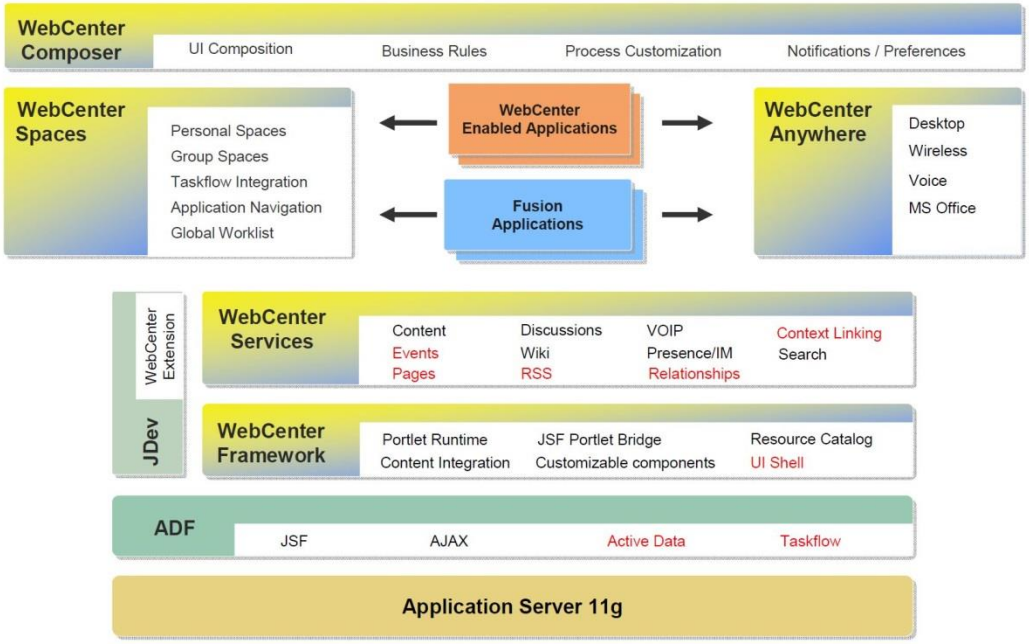


Figure 5.8: Oracle WebCenter architecture for KU (KU-CIS, 2010).

5.8.3 Oracle Application Development Framework

Oracle Application Development Framework (Oracle ADF) is a new technology based on the enterprise computing platform, Java Platform, Enterprise Edition (Java EE or J2EE). Oracle ADF allows the developers to focus more on the features of the application. It simplifies J2EE development by minimizing the need to write code that implements the application's infrastructure. As part of its framework, Oracle ADF provides these infrastructure implementations of applications. Oracle ADF recognises a set of runtime services and is also focuses on the development experience. It provides a visual and declarative approach to Java EE development through the Oracle JDeveloper 11g development tool (Figure 11 and 12).

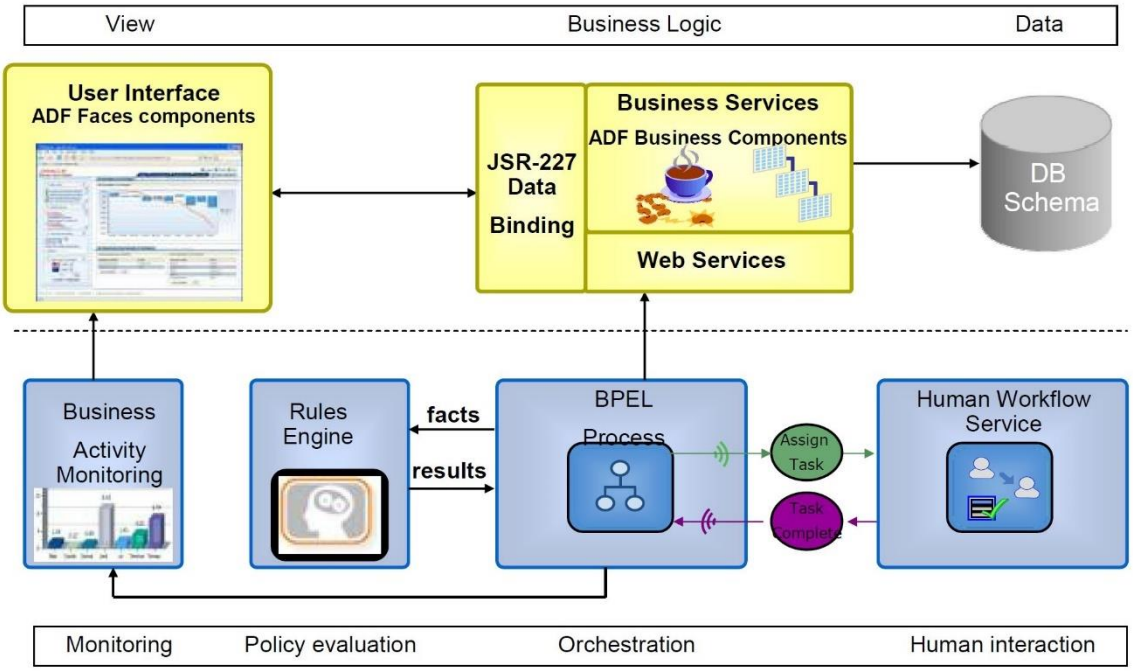


Figure 5.9: Oracle Application Development architecture (Oracle ADF) (KU-CIS, 2010).

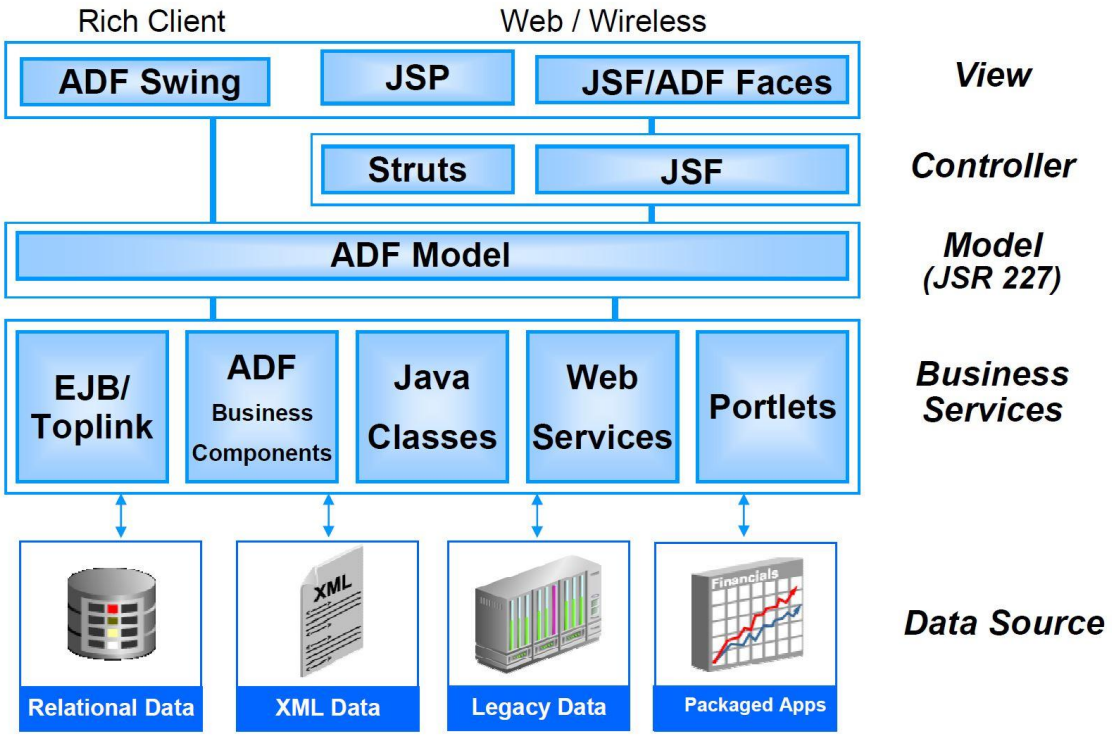


Figure 5.10: Oracle ADF Component (KUCIS, 2010).

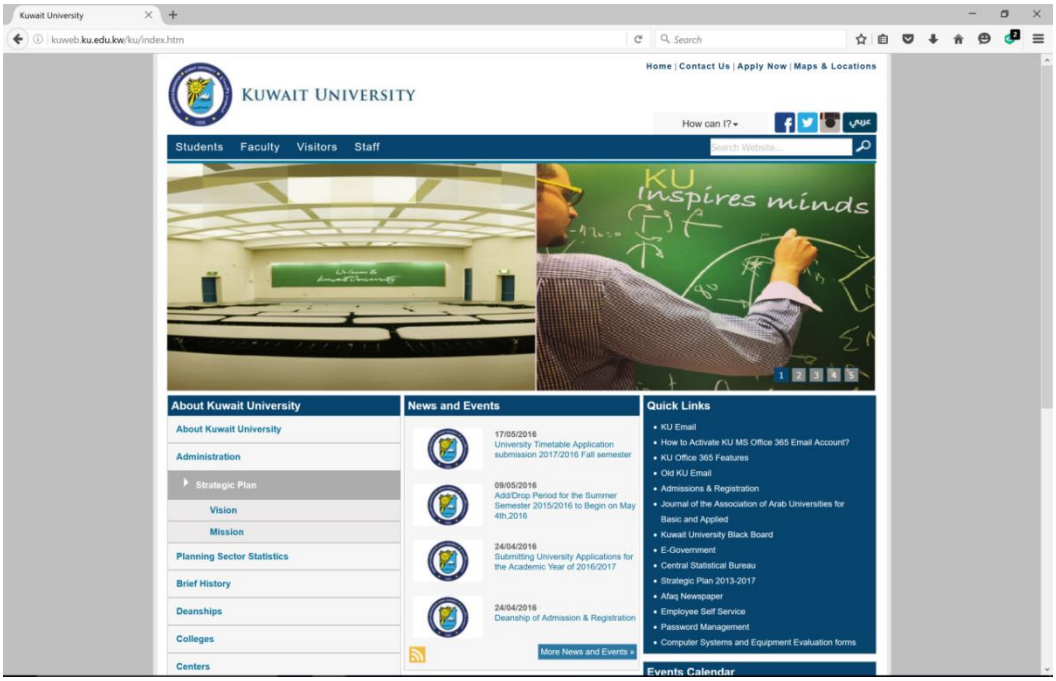


Figure (5.11): The main web page design of KU new website after the completion of phase two of the project.

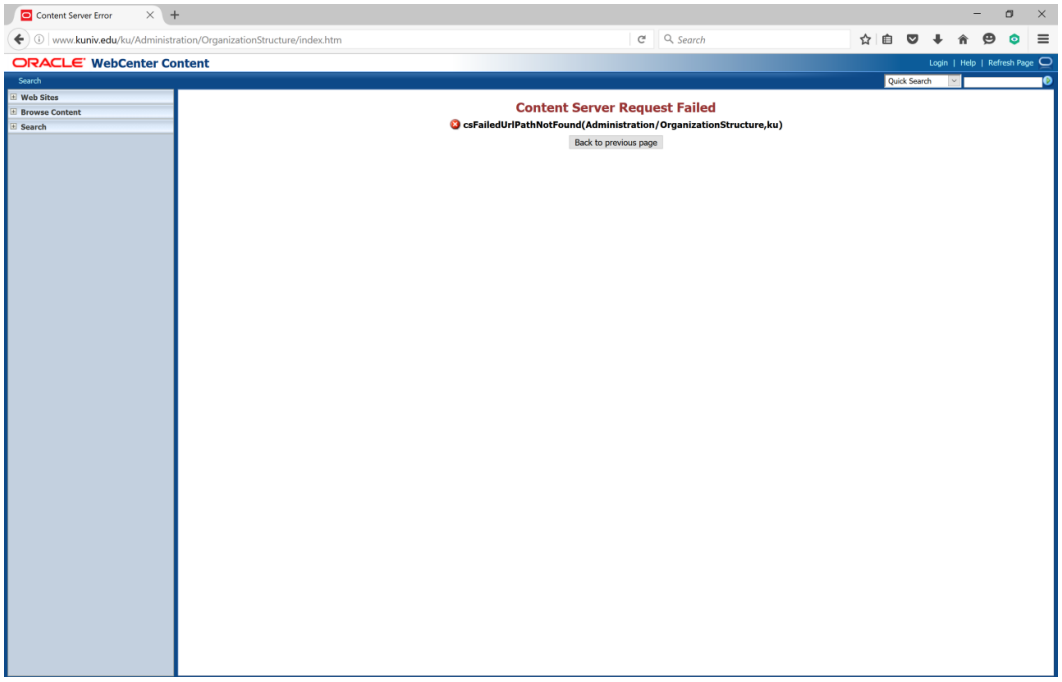


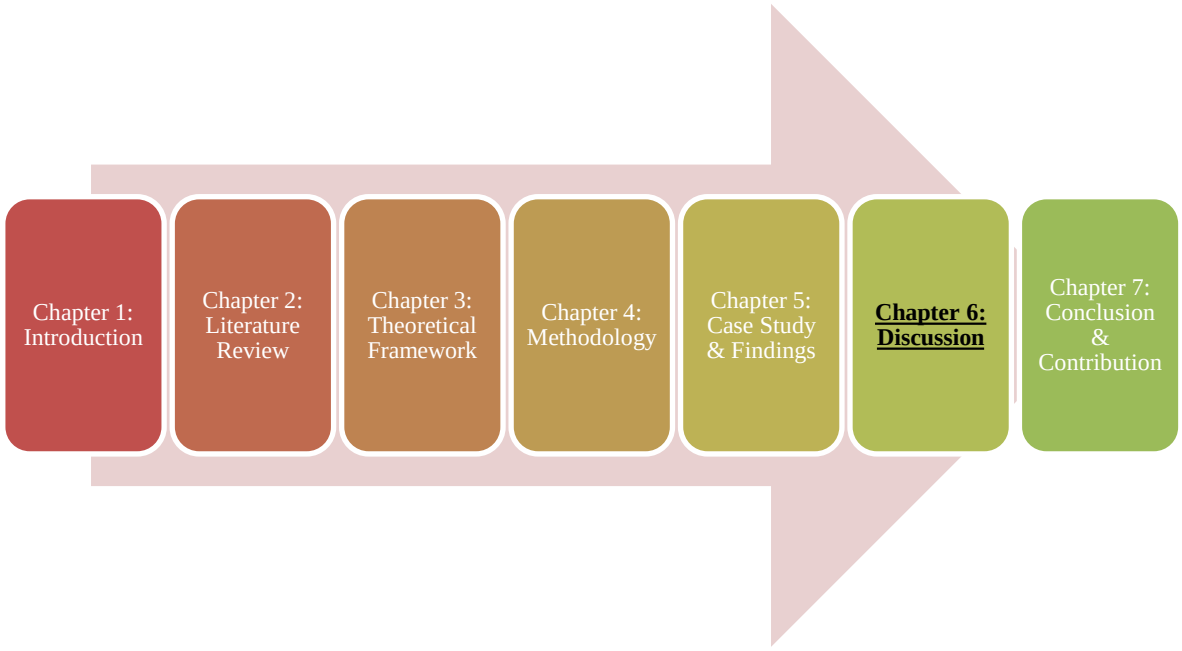
Figure (5.12): Sample of not working links of the KU new website after the completion of phase two of the project.

5.9 Summary of the chapter

This chapter provided a deep insight of the State of Kuwait and its governmental HEI's. Kuwaiti HEIs and their implementation of ISD projects have been highlighted. Kuwait is considered as developing country; however, it is financially very rich. The financial power is used by the government to advance the development of Kuwait's IT infrastructure and through this advancing of long-term sustainability.

The researcher has taken all measures to maintain the quality of the collected data and its analysis. The preceding Chapter six will discuss the research findings of this research study.

CHAPTER SIX


Chapter 1: Introduction
Chapter 2: Literature Review
Chapter 3: Theoretical Framework
Chapter 4: Methodology
Chapter 5: Case Study & Findings
Chapter 6: Discussion
Chapter 7: Conclusion & Contribution

6. DISCUSSION

6.1 Outline of the chapter

This study proposes a framework of critical factors for implementing IS projects successfully by connecting four major schemes: (people and action, development processes, project content, and institutional context) together and describing their interrelationship (McLeod and MacDonell, 2011). Having presented the findings of this research project in the previous chapter, the purpose of this chapter is to provide a discussion of these findings and, with appropriate reference to the literature review and the theoretical framework, identify the contributions to knowledge and required changes to the adopted framework of McLeod and MacDonell if any.

In this section, this research expands on the development of the two cases that has been chosen, it elaborates the preliminary concepts and codes extracted from the literature review, it demonstrates the analysis and findings from the two cases using the within-case approach and continues with the cross-case analysis of the cases, and finally to present a summary of the findings.

This chapter applies the Socio-Technical Systems theory of Mumford (ETHICS), as described earlier in Chapter 3: The Theoretical Framework, to the research sites and discusses the findings from the research study.

6.2 The revised model of McLeod and MacDonell's framework

The proposed change to the McLeod and MacDonell's framework addresses two key aspects. The first aspect is organisational, by adding a new macro-level category to the framework and rearranging some of the factors accordingly. It was noticeable that the environmental aspects surrounding the institution have a strong influence on it, and correspondingly its projects. The second aspect is theoretical, by understanding the main operator (*Events*) that makes these factors affect the ISD projects' outcome through a socio-technical perspective, see Figure 6.1.

6.2.1 ETHICS perspective of McLeod and MacDonell's framework

As discussed earlier in Chapter 2 and 3, Mumford's ETHICS view is widely accepted and respected and the framework of McLeod and MacDonell features many characteristics and it is a growing prominent success factor framework. The two approaches individually have some drawbacks and lack the coverage of some aspects, but together they complement each other and provide a comprehensive perspective of investigating the potential ISD projects success or failure.

Mumford realised that the implementation of ISD projects commonly resulted in failure to meet a satisfactory outcome. She noticed that failure was possible to arise even when the underlying technology or system was adequate. The underlying cause, as demonstrated through a Socio-Technical perspective, was the inability to overcome human factors associated with the implementation and use of the IS. During more than five decades, many success models for IS implementation were suggested, many CSFs were identified, and a plenty of approaches were developed to overcome such problems; however, large scale of ISD projects are often unsuccessful in practice. McLeod and MacDonell's framework lacks explaining the actual interrelationships between the various factors. It simply states that the categories and subcategories of factors are interrelated without showing what those relationships are exactly for a given ISD project and how they impact the outcome.

The combination between the key elements of McLeod and MacDonell's framework with the perspective of Mumford's ETHICS forms together an integrated and consolidated conceptual approach that helps understanding the processes of ISD projects. It concretes the framework with a more holistic perspective that features simplicity and acceptability of the ISD projects implementation, and at the same time it considers the humanitarian factors.

The empirical data and the given examples of events in this research show the interrelationship between the critical factors and the social and technical events that trigger them. The examples show how those factors impact, whether positively or negatively, on the projects outcome. Therefore, this study sees that it is appropriate to

add the perspective of Mumford's ETHICS into the framework of McLeod and MacDonell.

6.2.2 The positive (+ve) and negative (-ve) impacts of factors

Arrows that have been added to the framework represents the time constraints that adhere to the path of the project. Events that we have mentioned are determined by the timeline for the project. If the project progress is going on as the planed time schedule, then arrows go in clockwise direction and show a positive effect on outcome. While if the project progress is showing delays, and go behind the time schedule, then the arrows go in counter clockwise direction and show a negative Effect on outcome. At the same time, the occurring events, which either accelerate or decelerate the pace of work schedule and deliverables, could impact the use of the resources such as: time, effort and money. Those events determine (or trigger) the type of effect of the framework's factors, whether positive or negative.

In practical terms, the main operator for the success of any project is how to deal with the different events that projects expose during the ISD implementation process. These are critical factors, which must be handled with care, precision and attention to detail from all parties at all levels. These factors, in themselves, do not necessarily cause a direct effect on the output of projects, but the way of dealing with the concurrent events, whether in a negative or positive, is responsible for the impact type. The actions that are taken during the implementation process are typically associated with the different factors and the interrelationship between these factors makes the leads to the impact.

The positive and negative impacts of the factors are illustrated in section 6.3 through the presentation of several events that affected the studied projects' outcome.

6.2.3 Splitting the contexts

Another major breakthrough in the current research is differentiating between the organisational and, at a macro level, the country contexts in the revised framework. Any organisation is an entity of a wider context, which normally get influenced by environmental factors. As mentioned earlier in chapter 6, KU is one of the independent bodies of the Kuwaiti government and its subordination returns to the MoHE. However, KU follows the decrees and laws laid down by the government and prescribed by the Kuwaiti parliament (NA). Also, the administrative procedures and decisions of KU are subject to the supervision of the regulatory institutions in the State, especially regarding the purchase of any new IS, such as: the State Audit Bureau (SAB), the Central Tenders Committee (CTD), and the Central Agency for Information Technology (CAIT). The existing of this quantum of regulatory and supervisory institutions may be beneficial in terms of transparency in administrative procedures of the University; however, it is at the same time significantly contributing to the administrative bureaucracy, which the vast majority of participants in the interviews expressed their dissatisfaction about. They considered the bureaucracy and the long documentary cycle, in particular the purchasing procedures, is causing one of the major negative influences on the outcome of IT projects.

We believe that McLeod and MacDonell have erred in placing the Organisational Properties and Environmental Conditions within the Institutional Context of their framework. Those two factors have different characteristics to be kept within the same category.

Actually, the data collected through this research demonstrate that Environmental Conditions, as a macro-level, has a direct impact on the Organisational Properties within the government structure, and through their subordination to the governmental legislations. It is also forcing the organisations to follow the governmental routine actions, which they have no control over, and leads to disrupt any action that requires dealing with other governmental parties. Clearly, this prevents governmental organisations from being bound or able to take all decisions completely independently, without the supervision or mediation of other government bodies.

The case here about Kuwait University, whom have to deal with up to 3 governmental bodies when they intend to purchase new technological systems, as specified earlier in chapter 5. In Kuwait, any purchasing transaction carried out by a governmental organisation goes through a tender in a long documentary life-cycle process. Whereas the responsibility of tender goes to the CTC and the CAIT; the administrative procedure auditing lays under the responsibility of the SAB.

This long bureaucratic procedure, or as called by some participants "*excessive*" or "*extreme*" bureaucracy (P1, P3, P5, P6, P11, P12, P15, P19, P21, P22, P23), made the majority of the participants show their annoyance from the long-awaited time and they described it as one of the most important factors that leads to delay the delivery, not only in the two discussed projects in this study, but also many other ISD projects. They associated these frequent delays in the ISD projects to the time that the governmental procedures consume, which took few years to complete in same cases (P1, P3, P15, P19, P21). They stressed on the idea that the government need to seriously consider changing the long bureaucratic procedures of some of its body and they should not apply, for example, the same bedding system procedures, "*on such a rapid changing industry like technology*". The project managers (P6, P12, P18), the top managers (11, 12, 22, 23), and the middle-tier managers (P3, P15, P21) indicated that planning for the anticipated long documentary life-cycle and bureaucratic procedures of other governmental bodies, which have an indirect relationship with the ISD projects in KU, is a typically part of any their ISD projects planning. However, they all mentioned that this step is not always enough to anticipate the time required to get them done.

A section head at KUCIS (P21), gave an example of one of those irrationally long procedures when they made a request to deal with a technical consultant to provide training session for her team as one of the requirements in the Request For Proposal (RFP) document of Project B. The specifications of the consultant have been precisely defined to the CTC, as is the case in any RFP booklet. One of the most important specifications is that the person should be certified with: Oracle Certified Professional (OCP) - Oracle Application Server (version 10g) Administrator, and Oracle Fusion Middleware (version 10g). By the time the tender was awarded, the newer upgrade

version of Oracle was already released (11g) and Oracle was awarding certifications for people who pass the examination of their newer version.

One of the companies that bid for the tender provided the required evidence that their expert consultant is certified with the newest version of Oracle (11g); however, that bid was rejected because of that person. The tendering process that almost took a year to complete was under the responsibility of the CTC which commented that this person does not meet the required specifications. They mentioned that the RFP booklet defined the consultant's specifications to be certified as Oracle 10g not 11g, which did not apply to the consultant nominated by the company.

The company had to appeal on the result and raise a complaint about the giving reason for being rejected, as their consultant is an expert and was already certified with Oracle (10g) as well. They however, thought that providing the latest certification would give preference to their consultant, since the upgraded version was already released by Oracle.

According to (P21), KUCIS was expecting this company to win the tender as they were dealing with them for years and they built a reliable and professional relationship during these years. Therefore, KUCIS sent letters to the CTC trying to explain that this consultant has actually all the attributes they were requiring. They tried to explain that this person is very well qualified and could provide better training to their staff members.

After much correspondence between those parties, which typically consumed a long period of time, that company finally won the tender. However, only after almost 3 years from the date of requesting that system, KUCIS did not get the benefit from that training because that system was upgraded during this long time. However, the company, informally and kindly, accepted to replace that old training with the newer release for the upgraded system, instead of the old one. Otherwise, they would have to go through the same procedure again.

As it could be seen from the giving examples, the responses of almost all participants believe that the governmental procedures, as part of the environmental context of the organisation, could cause a massive impact on the ISD projects.

6.2.4 The triggering events

The empirical data and given examples of events in this research (presented in detail in the next section 6.3), show the interrelationship between the critical factors and the social and technical events that trigger them. The examples show how those factors impact, whether in a positive or negative way, on the projects progress and consequently their outcome. These events were spurred by the interplay of the social and technical factors. During the implementation of the ISD projects, the event could either starts as a social issue and then escalates to affect the technical aspects, or the vice versa, starts as a technical issue and then affects socially.

The case of the interpersonal communication (section 6.3.1), for example, illustrates how some events started technically when some members decided to discuss issues related to a project implementation and then affected on the social side when other members considered mentioning these issues as a personal criticism and started conflicts, which affected the relationship between the members of KUCIS, (P1, P6, P11, P22). Then later the members become unlikely to raise and discuss issues during the implementation of the ISD projects, which some could be important. A considerable number of participants (P1, P6, P7, P11, P13, P19, P20, P22), believe that this action could inflame the relationship between the members of the different sections, though they still believe that it is a professional action; and the stressed that reporting and documenting issues is very important.

Another example of events occurring in the IT projects could be seen in the way how the resources were managed in Project A. The management of human resource and the management of documentations show a critical malfunction that was close to lead to complete failure of the project. As a consequent to some poor decisions, a couple of employees decided to leave the CIS to a different department, one was the project

manager which holds a Ph.D. and the other was a computer engineer and holds a Master degree (P6, P7). The PM felt it was not fair to make her solely and mainly responsible for the poor practices of the project implementation, and the consequent long delay in delivering the project on time, though she got some support from other members. The top management decisions generated a dissatisfaction feeling, and thus decided to leave for not being appreciated. Considering the events occurred during this project implementation, the outcome cost much more than what expected in term of resources, time and efforts.

As stated earlier, events could cause positive impact on the outcome. According to a considerable number of participants (P1, P3, P5, P11, P12, P13, P15, P18, P19, P20, P21, P23), user involvement in Project B was appreciated and helped to mitigate their resistance to change to the new system. It was expected that the new technology will face strong resistance, especially from the deans of colleges. The project team was expecting to struggle the deal with it at multiple level of KU hierarchy. It was also expected that managing the resistance will consume a long period of time. However, the user involvement in the different phases of the project was good change management technique and lead to an unexpected level of user's acceptance (P18, P19, P20, P23). According to the project manager and a quality assurance member (P18, P19), the technique economised about 2/3 of the planned time that was expected to get the users' acceptance to that level. This event triggered multiple factors in a positive way, like: the good management of the project, sufficient requirement analysis, and wide users' involvement; which consequently impacted positively on the outcomes.

The empirical data shows the important of events as the main trigger for the factors, which is missing in the original model. This study sees it is appropriate to add events to the model. More examples are provided in the following section and they show how those events could affect the project's outcome in a positive or negative way. The difference between positive and negative impact of factors is missing in the original model, but it shown in the new model as represented by the clockwise and counter clockwise arrows.

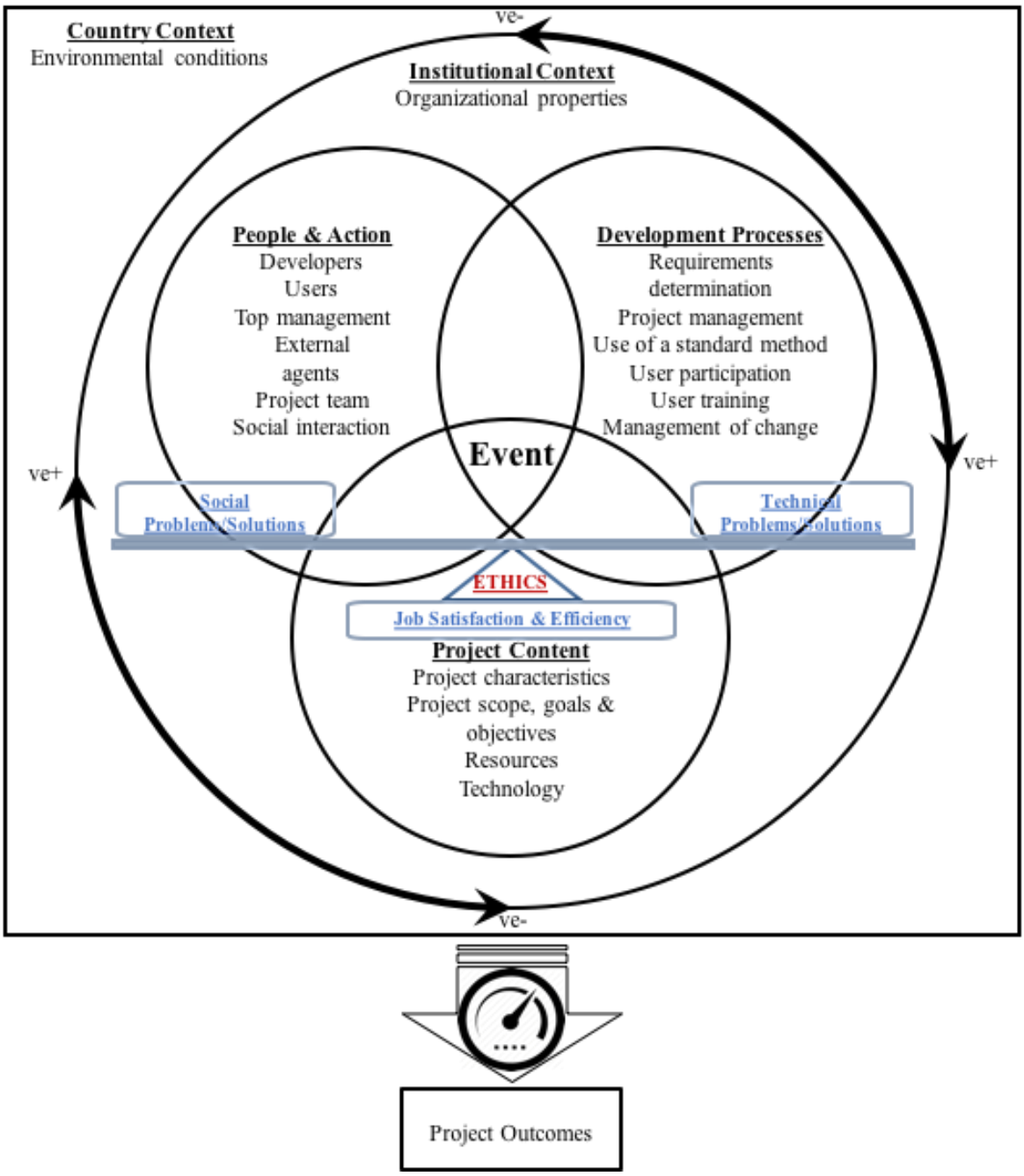


Figure (6.1): The revised framework of McLeod and MacDonell as a sociotechnical process framework for ISD project management

6.3 McLeod and MacDonell as a Socio-Technical Process Framework

As mentioned in chapter 4, the interviews were provided by a sample of 23 participants from the main fieldwork process and two from the pilot interviews. Only participants from the main fieldwork process are considered in this section as the participants in the pilot interviews were not part of the two selected projects of the current study. The participants in the pilot study were asked the same interview questions; however, they were regarding other projects they have been involved in. All main fieldwork participants are denoted as (P.1, P.2, ... P.23) in this section and subsequent chapters. All of the participants were based in the KU campus and have been part of at least one of the two projects. This criterion qualified each participant as a suitable candidate for the interview process.

This section presents the responses to the first and second research questions from the lens of McLeod and MacDonell framework (2011): "*What are the CFS affecting the outcome of IS projects at the governmental HEIs in the Kuwait?*" and "*How these factors influence on the process of implementing IS projects and affect their outcome in Kuwait?*"

The analysis of the data collection from documents and responses to the first and second research questions from the lens of McLeod and MacDonell framework (2011): "*What are the CFS affecting the outcome of IS projects at the governmental HEIs in Kuwait within the lens of McLeod and MacDonell's framework?*"; "*How these factors influence on the process of implementing IS projects and affect their outcome in Kuwait?*"; and "*What other factors affects the IS projects implementation in Kuwait?*"

The main challenge of qualitative research is how to make sense of the collected data. Analysis of texts from the various interview transcriptions, archival records and documentations have been used to find emerging themes based on the framework of McLeod and MacDonell (2011). Templates were then applied to thematically organised textual data for analysis and interpretation. The research data is organised into four perspective categories as shown below. According to King (2004), the

presentation of analysis under thematic headings is often adopted when using the Template Analysis and is recommended to help address the research questions.

In this section, we discuss the revised theoretical framework based on a comparing and contrasting between the literature and conclusive remarks on the development process in the two projects discussed in the previous chapter. The following subsections address each attribute of the four domains of McLeod and MacDonell framework within the context of KU.

6.3.1 People and action

6.3.1.1 Interpersonal communication

Some team members from different administrative sections talked about the existence of some shortcomings in the jobs (deliveries) of members from other sections. However, those participants (P1, P6, P7, P11, P13, P19, P20, P22) mentioned that they did not want to inflame the relationship between the members of the different sections nor with their section heads. Although this meant to keep some important subjects remain "*undiscussed*", it also helped to avoid "*unnecessary conflicts*" that could possibly lead to slowing down the accomplishment of the project on time, according to them.

Even though this attitude (which could be referred to some local norms) was a positive approach to smooth-out many potential conflicts during the implementation process of the project, however temporarily, this could be an indication of a serious miscommunication issue that could be reshaped later in a more complex condition and may lead to a negative impact on the efficiency and effectiveness of the ISD implementation process, not neglecting the possibility of problems occurring in the future because of accumulated issues. The participants (P1, P6, P11, P22) mentioned that there were some delays at some stage of the projects because of these issues, for instance, the requests of fulfilling additional requirements that were not identified at the beginning of the projects, where they expressed a dismay at the altered changes that

occurred later during the implementation. This issue produced concerns in creating annoyances for some people and possibly confronting conflicts due to the continuous change or information requests that could be needed later.

In previous cases, according to (P6, P7, P13), this scenario happened few times when some members from certain section mentioned issues about the actions of another section during projects' implementation. The consequence event created conflicts between the team members from the different sections. These conflicts have been dealt with in a more personal manner rather than professional and lead to unprofessional behaviours, which negatively affected those projects. The conflicts also, casted shadows on the professional relationship between the staff members after the completion of projects. This was the reason why the members later preferred not to discuss negative remarks regarding the other sections.

6.3.1.2 Malfunction project team

Prior to the implementation of project A, the previous KU website administrator who also was supposed to be the PM of the WCM system project (P0) left KUCIS shortly after the project launching. The website administrator who left KUCIS was the most experienced KUCIS members about the problems of the old website and knowledgeable about the design of the new website, which lead to a delay in the actual implementation of the project.

The project management was then assigned to a newly employed staff member who had no sufficient background on the problems of the old KU website, neither sufficient knowledge about the new system considering the lack of documentation. Moreover, there were no qualified members with sufficient experience in WCM systems in the organisation who could handle the project management after the resignation of the previous website administrator.

After assigning the project management to a highly-qualified member (P6), however, not so much experienced, which has newly been recruited to join the KUCIS team, KUCIS management decided to withdraw the previous PM and assign the role to the director's assistant of KUCIS to be the new PM (P11). KUCIS management decided to

displace some key people from the project team (P2, P6, P7) and return them to their original groups to do their daily tasks, while assigning staff with little or no experience to the project (P8, P9, P10).

Moreover, several participants stressed that the project, at certain stages, went out of control (P2, P6, P7). Especially with regard to the team members of the project due to the many changes that affected them during the course of the project. This led to tightness of control over the project team during some critical stages of the system development project. Among those was the project manager (P6) who was being replaced during the project implementation. She was very disappointed and later, as a result, requested a transfer to a different department along with another team member (P7).

6.3.2 Development processes

6.3.2.1 Malfunction project management

There were some staff members with no clear role in highlighting their contribution in the ISD processes of project A. A statement made by one of the project team members where he stressed that he was not feeling comfortable during the implementation of the project because of the marginalisation of his role (P2), he said, "*I am not here to sit on the bench to watch and do nothing, I joined to play a role*". After asking him if he did anything about the marginalisation, he stated, "*I did, but no one was listening. No one cared less*". The marginalisation was an issue that other team members were struggling with. Some accepted the tiny role assigned to them as, being part of such a main project at KU, "*would only look good to list in my CV as a good experience*", stated by a newly employed team member (P5). While most of the others, have the motivation to change that condition (P1, P2), or did not have an interest in the project (P9, P10). It is clear to an extent that there was more focus on technology rather than the employees' opinions resulting to a state of dissatisfaction to some of them and carelessness and selfishness to others. All those sudden changes in the project's team members did not affect the delivery of the project; however, those events certainly affected the outcome

as most of the participants agreed that the implementation process could have been completed faster if they felt more satisfied (P1, P2, P4, P5, P6, P7). Not to mention the loss of two qualified and experienced employees, PhD and MSc holder respectively, after requesting to leave the department (P6, P7).

Many participants of project A and B, especially the senior members, stressed that any new system selection should meet three main types of requirements: users, technical, and rules and regulations; in order to achieve an adequate system implementation and avoid resistance (P1, P3, P5, P11, P12, P13, P15, P18, P19, P20, P21, P23). They also asserted that such requirement statement process enhances the satisfactory level of the system. Few added (P3, P11, P12, P13, P15), that user involvement in such process helps in mitigating the resistance to system change. Activating and engaging the employees in system selection leads to even more users' acceptance even if the new system did not meet their expectations completely.

6.3.2.2 Information and knowledge management

The need for effective training in the IS projects seems abundantly obvious (P1, P3, P4, P5, P6, P11, P12, P13, P15, P16, P18, P19, P22, P23). For example, when asked about the level of training provided for project A, one participant pointed out that it is important to provide "*the users with an understanding of how to do a troubleshooting to a certain level*" and ended up that the training was "*was not sufficient*", which other participants agreed on (P4, P5, P6, P7, P9, P16, P17, P19, P20). Other participants added that at some level training was not enough and since the system provider was a non-local company, they faced some difficulties to arrange the training schedule for all departments (P6, P7). On the other hand, some participants believe that the training was satisfactory (P1, P2, P8, P10, P13, P14). However; it is important to mention that their roles in the project were mainly to prepare the infrastructure of the system and they did not deal with the implementation of the system itself. While the top managers (P11, P12, P18, P23) assured that KU spending generously on training sessions and that they were more than enough.

Because of the complexity of the projects and the need for a holistic view of the integrations between the many different sub-systems, training the inexperienced staff assigned to the project was highly unattainable. This is because the old system was not sufficiently documented, which makes the knowledge and the know-how reside only in the heads of key-people. Some participants stated that it happens often that team members are assigned to join a project team that have no training prior to, or during the implementation of the project (P1, P5, P7, P13, P17, P20).

It is true that, theoretically, the top administrative management of KU is continuously target raising awareness among employees to properly manage the available resources and avoid wastage, which could be noted through their statements to media, the distributed awareness leaflets, and the strict laws and regulations relating to resources' rationalisation. On the other hand, when it came to one of the proposed IS solutions to avoid some foreseen problems as a pre-treatment before they occur, they collided with the reality of the top management's slogan "*Since the available systems are currently working with no problems, then there is no need to tamper with them.*", as some senior technical staff and middle managers ironically stated (P1, P3, P15, P20). Even though this means that in the presence of these legacy systems without replacement or upgrading them could potentially lead to major problems and cause even greater losses and complications in the future that might have dire consequences. A middle manager complements (P15), "*One of our tasks is to alert any possible potential risks that could occur in any of the currently running systems at the university. We have had many demands in this regard and we proposed our resolutions to avoid some problems, but no one was listening to us*". In fact, this project, Project B, was the final and the only possible solution after a series of delays for taking decision to proceed with some solutions suggested much earlier. The reason for taking this step was the occurrence of many problems related to the previous system, which the technicians warned about long ago but later started to cost the university a lot of money, time and effort that could have been avoided.

It was noted that after the completion of the second phase of the project A, KUCIS did not benefit from what has been spent on the design of the website in the first phase as it

has been completely replaced by another new design. The new design was having some problems that were resolved previously in the first phase design, which result an unjustified wastage in both funds disbursed formerly and effort. Moreover, some links and web pages remained not working. One of the most important issues that has been remarkably resolved previously was the inconsistency of the website's pages which occurred again after the implementation of the next project phase. This may indicate a lack of coordination at the level of decision-making and the existence of divergence of views between the successive administrations. Nonetheless, it shows poor practices of information and knowledge management.

6.3.3 Project content

6.3.3.1 Resource management

The previous KU website administrator (P0) who also was supposed to be the PM of the WCM system project, Project A, left KUCIS shortly after the announcement of the beginning of the project. The previous website administrator was the most experienced and knowledgeable member in the KUCIS whether regarding to the problems of the old website system or the design and specification of the new WCM system. Leaving the KUCIS at that time, lead to a considerable loss in resources and delays in the actual implementation plan of the project and its final deliverables.

There were no ready qualified members with sufficient experience in WCM systems in the organisation who could handle the project management after the resignation of the previous website administrator. The project management role was then assigned to a newly employed member who did not have sufficient background on the problems of the old KU website neither about the new system design (P6).

Despite some miscommunications and the need for some reworks, most of the KUCIS's sections seemed to have a clear understanding of the concept of project B, performed to specifications, and fulfilled their requirements properly. As an example, the DBA section was assigned to install integrated databases for the system. By selecting a

single section, the project benefited from having a single point of contact at all phases of the project, from planning to installation through training and maintenance, which was completed using appropriate standards. However, this was not the case in Project A. The project manager and another participant (P6, P7) pointed out that their biggest obstacle was lack of resource management. Being new in the department and understanding how the administrative system, works were her main challenges as an employee. When she got assigned as the project manager, the tried seeking documents to understand the drawbacks of the old website system and the specifications of the new one (WCM), especially that the previous PM who could help with knowledge sharing was not traceable after his resignation, "*I was surprised when they told me to search online for the information that I needed to know! Such information should be well documented and archived to be retrieved in the future when needed.*", She stated. Then she questioned, "*How come a centre for information system that have no clear system for documenting the requirements and specifications of their existing systems or saving their long solid experience of systems implementation from being lost?*" Such poor practices contradict with the objectives of KU's strategic plan in using technology to improve the quality of services offered by the university. For KU, the CIS is supposed to be a priceless asset of information.

6.3.4 Institutional context

6.3.4.1 Floundering administrative

Another challenge faced the KUCIS's team while conducting the WCM system (Project A). KU have purchased several website systems over the recent years. However, they were never able to enforce the previous website systems to be used by all its colleges, centres and departments. Some refused because of the centralisation and lack of control over the content. Most of the other colleges and departments did not show interest in having a website because they never actually have one before. They did not have a department that takes care of the website and did not see the need of adding an additional role that requires extra effort. They believed that this role should be assigned to one of the KU top management.

The new WCM system was planned to resolve all issues occurred in the previous systems. The KU top management demanded KUCIS to provide a project of a unified look and feel website for all its colleges, departments and service centres that could fulfil their requirements. However, despite of their full conviction of the new WCM system, they could not impose the new system on everyone. Several faculties and departments remained using their own websites for a long period of time during the existence of the new website that cost a lot of money, time and effort. In addition, the electronic front of KU remained with multiple formats.

The resist of change was at the departmental level. The college deans and department directors and deans were refusing to give away their websites and join the unified website of KU. It took KUCIS team a long time to convince them that they will be able to have a full control over their new websites that belongs to them.

There was a trust issue regarding the new system specifications, whether it would fulfil their needs or not and the quality of KUCIS team. Several meetings have been held between KU top management and the deans and directors of KU's body with the attendance of KUCIS representative. KUCIS representative gathered any new requirement and demonstrates that issues with previous websites are resolved with the new system.

Part of the complexity is due the nature of the culture that exists in the organisation for being an individual un-cooperative culture especially between the different sections of KUCIS. Many participants denied knowing details about the project's phases done by the other sections' members.

Some staff, particularly non-citizens, tend to keep their knowledge and experience to themselves for different reasons, including job security, according to a section head (P1). Some key members consider keeping the knowledge to themselves would make them indispensable and increase their value in the organisation.

Moreover, it was noticed that all staff members who left KUCIS after starting the projects were non-citizens, which clearly emphasis on the above point of job security.

The non-citizens have more tendencies to leave for a better job whenever they get the chance. This issue can show 2 other issues. First, the loyalty level of the non-citizen employees toward their organisation in the public sector. It shows that the increase feeling of job insecurity leads to amphibious relation to organisational loyalty. Second, the poor way governmental organisations protect themselves. The relationship between any organisation and its employees should be based on a mutual agreement that protects the rights of both sides and assure that everyone commit to their duties. In another word, it should be a win-win relationship. KU, as seen in the case, did not maintain the public interest. The resignations of critical team members have occurred in the two projects and they caused many difficulties in the implementation process. This, obviously, affected the outcome of the projects by consumption of more time and effort. KU should establish a new policy to assure a pre-set notice of resignation before allowing the leave of any employee, or activate this condition if they already have such policy. Such issues could lead to crucial impact and could cause a complete project failure.

6.3.5 Country context

When considering sociological and cultural factors that are relevant for IS projects in governmental settings in Kuwait, it is useful to consider the existing knowledge that indicates potential barriers to Information Technology (IT) use and adoption in the Arab world due to mismatches between social and cultural assumptions that are embedded in IT that are directly imported from the non-Arab world (Leidner and Kayworth, 2006; Tan, 2002). In addition, even in the absence of such cultural conflicts, sociological and cultural factors are still considered crucial for the development, adoption and use of IS in a given context (Avgerou, 2013; Lawrence and Oivo, 2012; Leidner and Kayworth, 2006; Smit and Dellemijn, 2014; Tan, 2002; Thowfeek and Jaafar, 2010).

More precisely, social and cultural differences related to management and organisation styles have been identified as leading to unsuccessful IT use and policies in the Arab world (Al-Fadhli, 2009; Atiyyah, 1988; Tan, 2002). However, even within the Arab

world, there are significant sociological differences between various countries (Al-Fadhli, 2009; Badran and Zou'bi, 2010; Kabasakal and Dastmalchian, 2001). Such differences are reflected in the observed impact on IS projects and the specific areas in which they are used in various Arab countries. For instance, Jordan used IT most successfully in areas related to the management of its cultural heritage, while Saudi Arabia aimed for a wide-scale adoption of IT but experienced mixed results in part because of failing to ensure full compatibility between the various IS deployed (Atiyyah, 1988; Goodman and Green, 1992; Tan, 2002). By contrast, there is comparatively less knowledge regarding concrete impact of sociological factors in Kuwait on its IS project's implementation. However, there is evidence that the social environment is crucial for IS projects in Kuwait in a variety of areas, including both public and private sector organisations (AlAdwani, 1999, 2000, 2001, 2002a, 2002c, 2013; AlAwadhi and Morris, 2008, 2009; Al-Fadhli, 2009; Khalfan and Gough, 2002; Rouibah, 2008; Tan, 2002).

6.3.5.1 Lack of national strategic IS plan

Implementing a new ERP system in the governmental sector involves reliance on customisable off-the-shelf software. The other available option is the creation of a specialised suite of applications to manage the organisation unique data-management infrastructure, which is not a desirable option in the governmental sector. If the organisations begin their quest with a survey and review of available ERP products rather than an assessment of the organisation's requirements, they could end up trying to shoehorn their data into a solution that doesn't fit their needs. In order to avoid new technology resistance, the shortfalls of current technology that need to cure and the business requirements should be specified.

In relation to the last part of the interview, which addressed the main issues that should have been avoided for better implementation of the system in KU, most participants narrowed the requirements to six main parties: Top Management, Rules and Regulations, Primary Users, Technical Members, Developers and Users, Training, and Adopted Technology (P1, P3, P4, P5, P6, P8, P11, P12, P13, P15, P17, P19, P20, P22, P23). From the participants' perspective, the Top Management and the Rules and

Regulations are the main players in the IS implementation issue at this point of time in KU. Giving that 15 out of 23 of the participants' statements about the main requirements for IS implementation were directed at the Top Management and the Rules and Regulations, as they are parties responsible for all decisions in the university. Participants consider colleges' deanships and other department directors to be very important partners in the IS implementation process (P4, P11, P12, P20, P23).

The Interviewees claimed that the government, along with the Ministry of Higher Education (MoHE) need to develop a stable and clear, long-term, higher educational policy and that policy has to be backed by the support of the National Assembly (the Kuwaiti's Parliament). This policy must be a systematic built through the cooperation of legislative and executive authorities by formulating strategic planning for information systems. One participant (P23) states that the "*government did not offer a clear and timed government programmes or plans since 1991 until it finally came with the Kuwait Development Plan (KDP) in 2009*". He further states that the instability of the Kuwaiti government and its historical disagreement with the National Assembly (NA) may affect the execution of KDP and obstruct all education plans, including IS projects' implementation. Therefore, key educators and member of NA wish the Kuwaiti Cabinet to be stable and gain the support of the NA so it can execute its future strategic plans. Other participants also affirm that the KU top management and the MoHE needs to assign a qualified educational management. The also asserted that the MoHE has to rationalise educational spending, as the huge educational budget is spent mainly on salaries while schools suffer from a lack of IS equipment and fast Internet access. They also claim that the MoHE need to revise technical members' preparation and training programmes to provide them with the necessary knowledge and competence to implement IS projects. Furthermore, interviews revealed that the employment and promotion policy, in addition to the quality of non-Kuwaiti technical members employed to work at KU, needs to be revised. Salaries for non-Kuwaiti employees are not attractive for experienced members; therefore, mainly inexperienced members come to work in Kuwait and rely on self-learning with the continuous feelings of job insecurity, which keep them reserve their knowledge.

6.3.5.2 Bureaucracy of governmental body

Every public organisation inherits a set of rules and restrictions even if it is an independent governmental organisation, such as KU. The governmental organisations inherit a set of operational conditions and challenges that are as well inherent in the field and context in which they operate. This resulted to identify a unique set of macro-level factors that affect those organisations and the outcome of their ISD projects. Public organisations typically have very little control or ability to actively manage the environmental factors, due to their nature of being under the influences of a higher-level authority and bigger society, which they are obliged to follow and/or remain homogeneous with. An overview of some of those influences has been discussed earlier in Chapter 5.

The governmental organisations face enormous pressures to improve their services and use resources more efficiently. Moreover, people are doubtful of the public sectors' ability to provide quality services through state of the art technologies.

Bureaucracy is one of the major factors affect the progress of ISD projects. In the governmental organisations, in most times, have greater concern on the application of rules and regulations rather than time or cost constraints. The rapid technological development makes it imperative for the decision-makers to accelerate the routine procedures so as not to contribute to the delay in starting the implementation (and the completion) of these projects, which would therefore contribute in reducing the practical importance and the need for the new system. Therefore, the bureaucracy and monotony officialism could be also considered as critical factors that negatively impact the outcome of IS projects due to their nature.

6.3.6 *Realised project outcomes*

6.3.6.1 Socio-Technical Eventual Interplay within the KUCIS

Our earlier discussion refers to the technical nature of the project contents used by the people and their action who construct a social sub-system. These two sub-systems

adapt to the surrounding institutional and country factors during the development process in both projects. This interplay changes across a serious trigger events as discussed in the following sections.

6.3.6.2 Socio-Political Issues Related to IS Implementation

The impact of the political dimensions of IS implementation plans in Kuwait seem to be very significant and its influence both supports and hinders. Participants acknowledge the existence of some general supportive political factors that may be the foundation of the current interest in IS implementation, namely the global and regional trend to implement IS in education, governmental and public agreement to back IS implementation plans and the government's financial ability to support all requirements for IS implementation. They confirm that the most important political factor supporting IS implementation in Kuwait is the mutual intention between the government and National Assembly to implement new technologies in the educational system in order to bridge the technological gap between Kuwait and developed countries. This government and public agreement to support education offers continuous political and financial assistance for any educational projects presented by MoHE. Participants also affirm that the government's decision to instigate many e-government projects in all government ministries and authorities over the last 20 years is considered to be one of the most important factors supporting IS implementation in education.

On the other hand, other participants state that many local and regional political factors exist that strongly obstruct implementation of many national development plans and projects, especially in the arena of higher education. Similar to Al-Ramiz (2009), many interviewees claim that the Kuwaiti government has suffered from a lack of a clear political vision since the Kuwait liberation in 1991, not only regarding educational development, but also advancement in many crucial fields in the country. A top manager of KU (P.23) asserts that the "*government did not offer a clear and timed government programs or plans since 1991 until it finally came with the Kuwait Development Plan (KDP) in 2009.*" He also confirms that the Kuwaiti government has suffered from weakness, instability and disagreements with the National Assembly

over the last 10 years, which has led to the Kuwaiti Cabinet being changed more than seven times during this period. Many participants claim that local political instability has negative impacts on all government plans and performance related to people's basic affairs such as housing, health and education. Ministers used to be replaced within a very short period of time before they managed to execute any planned projects. Interviewees also affirm that regional political factors influence the performance of the Kuwaiti government, as regional political issues used to dominate a major part of its attention and efforts. Some participants believe that the instability of the political circumstances in the Arabian Gulf region and the Middle East, for example, the Iranian-Iraqi war in 1980, the Iraqi invasion of Kuwait in1990, the US invasion of Iraq in 2003 and the recent spread of extremist terrorist groups with their intention to play a major role in the area and the consequent resistance of many Arabian and Western governments, is influencing general development plans in Kuwait, as it used to be at the heart of these political conflicts.

6.4 Summary of the chapter

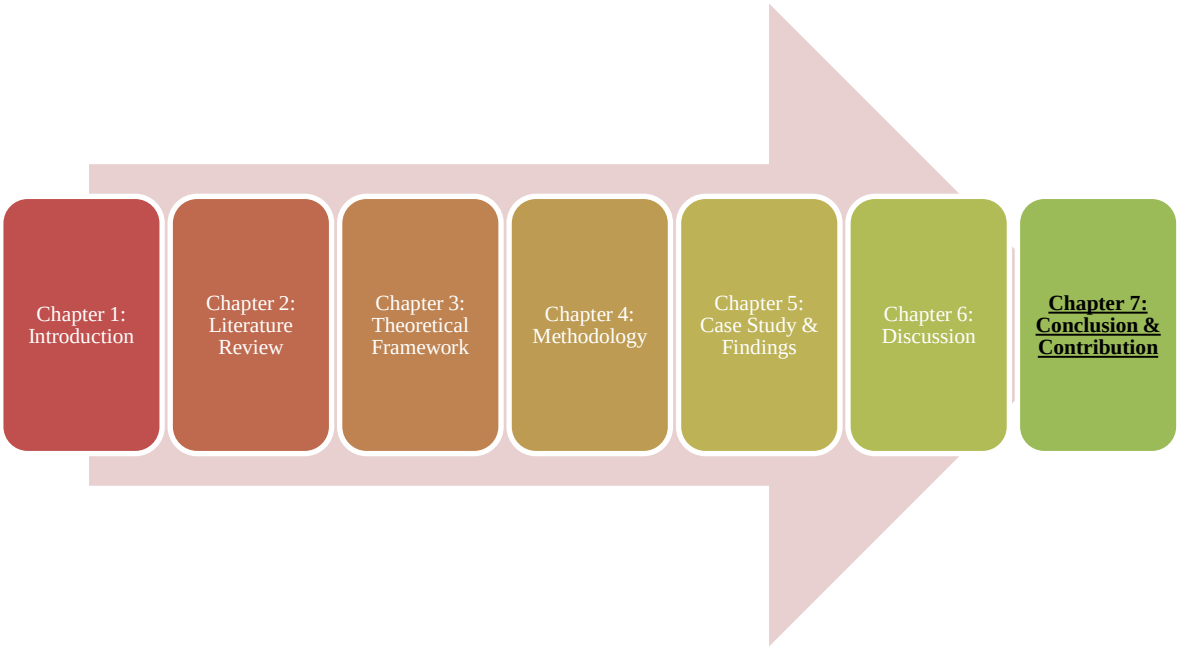
The key findings of this interpretive study were derived from interviewees' perceptions and a case study of two IS projects. The secondary data has been collected through literature and documents review. The data collected from the various research resources has been analysed using Thematic Analysis based on the categories of McLeod and MacDonell's framework. The research methodology was selected as it facilitates the researcher in answering all the research questions.

A discussion of findings from this research has shown that areas investigated are collaboratively playing major roles in developing a socio-technical process framework for ISD project management in a public HEI in Kuwait, which helped to understand the ISD projects implementation.

The analysis has revealed many aspects of the ISD projects implementation along with the various contributions of the current study are discussed in the preceding chapter. The current research outcomes and meeting its aim and objectives have also been

provided. The next chapter will be addressing the credibility and limitation, and some concluding remarks. Finally, a set of recommendations for future studies is presented at the end of the chapter.

CHAPTER SEVEN



7. CONCLUSION, CONTRIBUTION AND RECOMMENDATION

7.1 Outline of the chapter

The current chapter outlines the main conclusion of this exploratory in nature case study in relation to the aim, objectives, and questions of the present research. It attempts to bring together the conclusions, contribution, limitation and recommendations based on the findings of this research. Overall, it offers an evaluation of our research audit (See Klein and Myers, 1999) and demonstrates the major research decision in relation to the area of concern, framework of mind, and the methodological threads. Our evaluation addresses the research quality, usage, impact, benefits and challenges while providing insights into further improvement to the framework of McLeod and MacDonell of factors that impact the outcome of IS projects in HEI (see figure 7.1).

By-product of this evaluation three levels of contributions are highlighted; namely, theoretical and practical. Each is discussed with reference to the relevant sections in Chapters 2-6.

7.2 Research outcomes and meeting research aim and objectives

The aim of the current research has been shifted from "*identify a framework of factors and that influence the success/failure of the IS project management*" towards "*exploring the processes and event of interplay between the technical and the social subsystems of the projects*". Our insight from the State of Kuwait has also drawn some characteristics that exist in other GCC such as KSA and UAE. These contexts reflect an equal level of interrelationship between the social and technical subsystems. The perception towards the critical factors that impact the outcome of ISD projects from the perspective of a public HEI in the State of Kuwait (Kuwait University). The following section audit the delivery of the pre-set research objectives (See section 1.3) as follows:

7.2.1 Research Objective (1)

Research objective (1): ***To explore the extent to which the framework of McLeod and MacDonell (2011) helps understand the process of IS project management and its outcomes in a public Higher Educational Institution (HEI) in the State of Kuwait*****.** The purpose was to guide the researcher in conducting the empirical case study and data collection based on the selected framework. To meet this objective, a better understanding of McLeod and MacDonell framework was identified during IS project management lead to a more dynamic version of the framework that considers the social and technical subsystems of an organisation. The CSFs were identified from the earlier literature review (McLeod and MacDonell framework) and primary data collected at KU using interviews and archived data also helped achieving this objective. The findings (Chapter 6) and a discussion (Chapter 7) of the perceptions were presented and thoroughly discussed respectively, providing a justification for the need of a revised version of the framework.

7.2.2 Research Objective (2)

Research objective (2): ***To map the flow of the social and technical factors during the implementation process and their impact on the final outcomes of IS projects in order to identify a framework of critical factors affecting the implementation of IS projects and their outcome, which fits with the environment of governmental organisations in the State of Kuwait and similar contexts***. Our literature review chapter highlights different definitions of the so called "IS" and pointed out the influential factors that shape the outcomes of ISDP such as *training and education, business process re-engineering, system integration, and Implementation procedures.* This review also revealed success factors such as managing operational risks and high technical specifications. Continuing our quest, section 2.3 mapped different classical models that addressed the critical success factors of the IS project management, including design, implementation, and post-implementation. After a critical discussion of the highly-cited models adopted to study the IS project management in education,

McLeod and MacDonell found to be relevant to the developing contexts such as Gulf countries. The final map is shown in Figure 3.1 that guided our fieldwork.

7.2.3 Research Objective (3)

Research objective (3): ***To understand practices, philosophies and theories related to CSF in IS projects***. That is, critically review the relevant socio-technical theories that help understanding the ISD projects and how project outcomes evolve in relation to changing actors and actions, project contents, and development process. This objective was achieved, as detailed in Chapter 3 that critical review the ANT and STS as the most cited theories in previous studies that addressed the IS project management in education. A socio-technical version of McLeod and MacDonell framework has been demonstrated in Figure 3.1 with reflection on how ETHICS (Mumfordian) approach leads to new process and interplays between the elements of our model. This theoretical framework was revisited again in Chapter 5 to relate the contextual issues of IS project management in developing countries, including the State of Kuwait. Then, themes from the literature as well as the fieldwork were incorporated to build our final edition of process-based socio-technical McLeod and MacDonell.

7.2.4 Research Objective (4)

Research objective (4): ***To understand the mechanism of interplay between the CSF and the way the co-evolve to shape the IS project outcomes.*** Our findings demonstrated in Sections 5.2 and 5.3 highlight the technical issues such as project architecture and web-specifications and how they dominated and be dominated by people interaction when legislative and tendering issues rise up. Then, section 5.5.6, demonstrates how the project's strategic goals lead to different events of implementation and deployment that lead to the expected outcomes in relation to the government procedures. Later, sections 6.3 and 6.4 elaborated those processual events

in terms of IS selection protocols, the tendering cycle, the resistance to change, and surrounding cultural limitations.

7.2.5 Research Objective (5)

Research objective (5): ***To draw a guideline for IS professional in governmental HEI in the State of Kuwait in order to improve current practices in implementing IS projects.*** Chapter 6 draws lessons for policy makers, IS professionals, academics, administrative staff, as well as students on how to manage IS project management in a participative manner. These recommendations have been benchmarked with the key success factors discussed in our literature review and then the practical contribution discussed at the end of this current chapter 7.

7.3 Research contribution

This research provides a revised version of McLeod and MacDonell framework of factors that impact the outcome in IT projects to present the current research findings (see Figure 7.1). The newly modified framework is theoretically encased in socio-technical perspectives, which makes it more dynamic in term of understanding how those factors actually affect the projects' implementation. It demonstrates the mechanisms in which the interplay between the social and technical aspects leads to events that trigger the impact of a factor during the implementation process, and how they are contributed to factors the affect the outcome of IS projects, to address the research questions.

The ultimate aim of this research project is to contribute to the development of a theoretical framework that clarifies the critical factors that affect the outcome of IS projects within the Kuwaiti and similar developing contexts, and hopefully broader contexts. The current research study provides additional knowledge at different level, theoretical, practical and methodological.

- Understanding the interrelationship between the CSFs of McLeod and MacDonell's framework based on the understanding of social and technical subsystems in a HEI in Kuwait.
- Providing a dynamic conceptual framework of factors that affect the outcome of IS projects implementation in Kuwait that keep into consideration the interrelationship between the social and technical subsystems and their roles in triggering the impact of those factors.

7.3.1 Theoretical contribution

In terms of contribution to knowledge, this study tried to fill the gap of IS project management in higher education in general and in a developing Gulf contents in specific. It offers a process-based view of McLeod and MacDonell (2011) as a framework for IS project management in HEIs. Our literature review highlighted the lack of empirical studies that adopted McLeod and MacDonell (2011) model and the difficulty of developing "*ready-made map*" for other researchers in the HE and learning technologies in general. As demonstrated in ***Chapter 5*** and in ***Figure (7.2)***, our final theoretical framework offers an operational demonstration of this model and customises it to the Gulf context and other developing contexts with similar characteristics.

The aim of this research is to explore different candidates' conceptual frameworks of IS projects implementation in order to identify and prioritise the influential factors that influence the performance of IS projects within HEI in the State of Kuwait and similar contexts. As shown in ***Figure 6.1*** and ***Figure 7.2***, we developed a new version of McLeod and MacDonell's framework that reflects the socio-technical view of IS project management in HEIs. Then our fieldwork evidence has demonstrated the processual dimension on how temporal events trigger the interplay between the CSFs (including People and Action, Development Process, Project content). Each group of factors evolve in different directions (i.e. positive or negatives) in response to these events and reflect different socio-technical balances.

Building on the concept of the STS (Mumford, 1981), the current research treats the implementation of IS projects as a socio-technical phenomenon embedded in an emergent process of change in professional practice. These changes are characterised as a process of sense making and interactions among stakeholders with the description over time based on different events or incidents, which can be encounters or episodes. Episodes constitute a series of events that stand apart from others; encounters mark their beginning and end. This approach yields an event-rich framework that offers a theoretical explanation of the process of the Information Systems Development Projects (ISDP) and the factors that influence their outcomes, as well as practical heuristics to aid system developers, project managers and decision makers.

Therefore, the current research uses a case study of two prominent IS projects in KU to develop a process-oriented view of ISD projects that focuses on the dynamics of the human and organisational aspects, through their interaction with the critical factors of McLeod and MacDonell framework. This helps to understand the social and technical interrelatedness of the occurring events that would trigger any of these factors during the project implementation, whether negative or positive, and therefore, the impact on their outcomes.

While McLeod and DooLin (2012) attempted to develop a model for situated socio-technical change in ISD in multinational manufacturing organisations such as AlphaCo, they did not extend the original model developed by the same author in McLeod and MacDonell (2011). Their attempt also addressed a developed context where institutional factors such as structure, task, and mutual effect between actors and technology are more important that the CSFs considered in our framework "***Process-based Sociotechnical McLeod and MacDonell***" (See the figure below). This model helps understand how and why specific project outcomes evolve over time in response of interdependent social and technical changes during the lifecycle of the IS projects. In contrast to McLeod and DooLin (2012), our research followed an inductive analysis that enabled highlighting different meanings of processes, and socio-technical changes. In doing so, we did not only consider the "*emergent processes*" (Markus and Roby, 1988) within the project boundary, but also the national context of IS project, including

tendering and outsourcing decisions, legislative issues, and political discourse (See section 5.2.2 and 5.3).

In another recent commentary, Lyytinen and Newman (2015) offered an explanation of the complexity of the socio-technical change in HEIs across multiple layers. However, the paper completely ignores the outer environment and the cultural, political, and legislative issues that shape the final outcome of IS project management in developing context. Information Systems such as Blackboard, e-Prog, Agresso Financials are perceived differently by stakeholders in developing Gulf countries. The sociotechnical changes associated with the such projects follow more complex processes in the developing context than even the developed context.

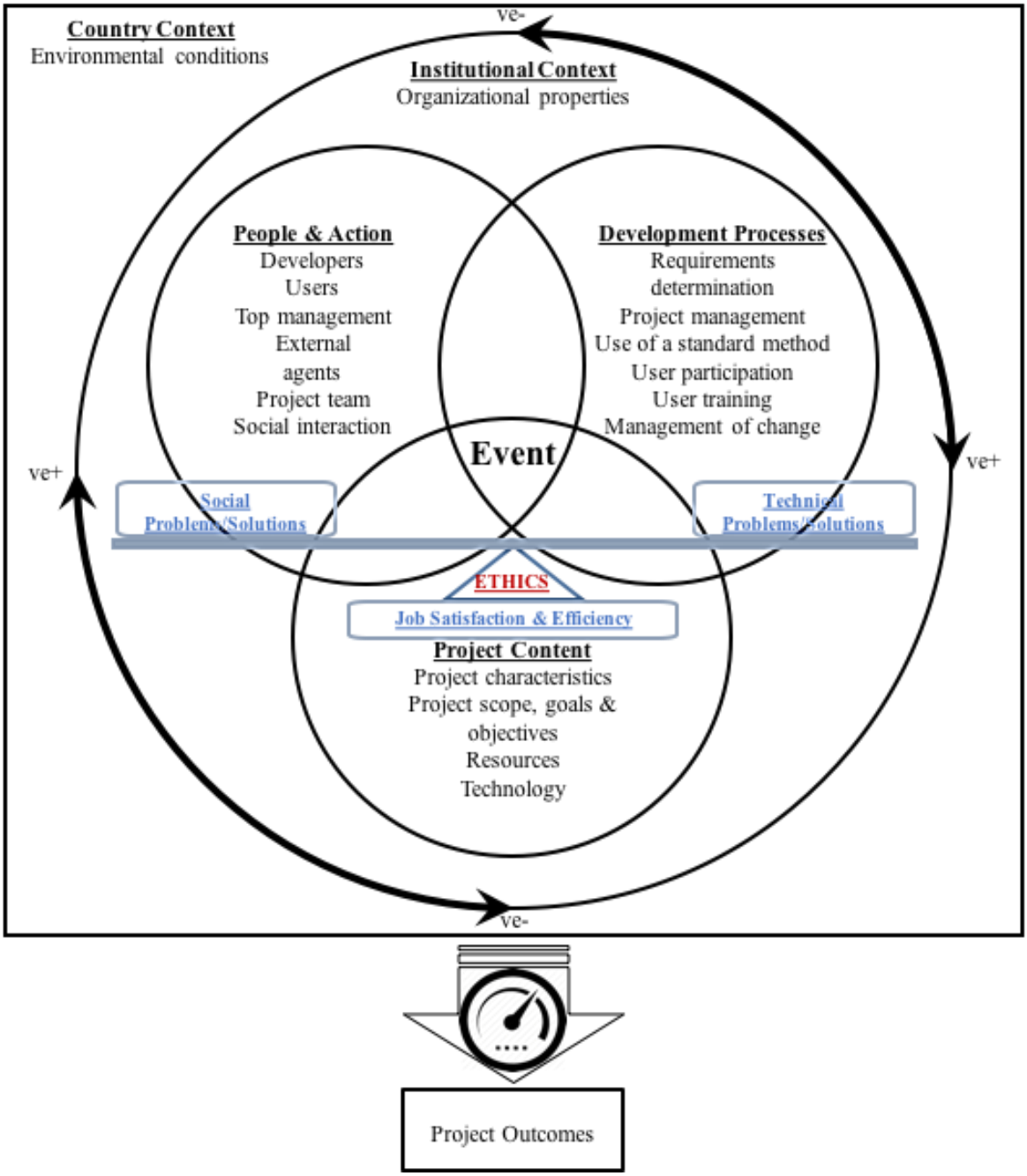


Figure (7.2): Process-based Sociotechnical McLeod and MacDonell's framework

7.3.2 Practical contribution

This section discusses the practical applications this research study has added to the IS projects management (including, implementation and post-implementation) in the Kuwaiti HEI context. The present work adds contributions for Policy Makers (macro level), IS Project Managers (organisational level), and professional Individuals (user level). The following subsections demonstrate how the outcomes of this work adds to these different levels.

7.3.2.1 Policy makers

Some of the practical contributions of the research are that the final proposed framework can be utilised by policy makers in Kuwait (Kuwait National Assembly and relevant Governmental body in Kuwait) an instrument to maintain and improve the transformation process of IS projects and maturing the implementation process of any new IS, not only in HEIs, but also in all different governmental bodies (ministries and authorities).

The implications of this research are important and substantial for policy makers, IS project managers, developers, and academics with an interest in studying or building a successful implementation model for IS projects in Kuwait. There is a shortage of research in critical factors that influence the outcome of IS projects in the context of Kuwaiti governmental organisations. Thus, this study can be used as a potential base for further research. The findings of this research study are related specifically to a governmental HEI in Kuwait. Therefore, this research can provide recommendations to all the body of Kuwaiti government and those of similar context wanting to build sustainable success in IS projects.

Furthermore, Kuwaiti ministries and governmental authorities, in general, lack sufficient experience in implementing IS projects with the best possible outcomes. This phenomenon, the failure of IS projects, has occurred repeatedly not only in the Kuwaiti context, but also worldwide, as shown earlier in chapter one. The decision makers in Kuwait, *the Kuwaiti Parliament and Government*, can consider the outcome of this research (the proposed framework) as a reference for the enactment of laws,

regulations, and clear mechanisms for the management and implementation of IS projects in various government agencies, which could enhance their decisions. As mentioned earlier in (Chapter 5), IS projects in the governmental sector in Kuwait are mainly outsourced through a tendering process supervised and audited by several governmental authorities like the CTC, CAIT and SAB. These organisations can recognise the influence of their roles in the IS projects of any governmental body that acquires new technology. This research will help policy makers understand the nature of IS projects and sense the need to simply the procedures. Overall, it offers a grassroots view that policy makers used to ignore when it comes to implementing mass-scale IS projects.

7.3.2.2 IS project managers

Because of the critical role of IS in support of the day-to-day operations and strategic positioning of the modern organisations and enterprises, it has become a ubiquitous and increasingly significant part of the fabric of most of them. Consequently, the implementation of IS projects within governmental organisations almost invariably results in a wide variety of impacts upon the design of the business, its economic performance and the working conditions of members of staff.

This research will help us to understand the impacts of roles of different stakeholders before, during and after the implementation period of the IS projects. Decision makers and project managers can now gain some understanding of the circumstances of how critical factors affect the outcome of IS projects in Kuwaiti governmental organisations, since this research explains the mechanism of events that trigger the impact of these factors on IS projects, whether positively or negatively. If the decision is used legitimately, it would solve many problems regarding this phenomenon in the Kuwaiti public sector. Such decision would also help to improve performance, since these factors can have positive impact on IS projects implementation, which is reflected on their outcomes. Moreover, it would help in decreasing costs, saving time and reducing extra efforts. Consequently, the policy makers could now focus on these factors and adopt regulations that would encourage them to save the resources.

7.3.2.3 User level

The current research study is important in various ways. First, it will help understanding the roles and impact played by the different critical factors during the implementation of IS projects. Scrutinising these factors through the perceptions of the people who works in the IS field contributed in understanding the local context and the aspects that makes it different from the western context. In addition, it helps in recognising the shortcomings of the adopted framework of McLeod and MacDonell and suggests a revised version, which will help in future in IT departments in conducting their projects.

Last but not the least, the research provides important information about how those critical factors can influence the outcome of IS projects to the technical employees. The proposed framework can strengthen their understanding about the influences imposed on processes during the different phases of the IS project implementation, which on one hand, can positively impact on the IS teams' performance. While the socio-technical perspective of the framework, on the other hand, would improve not only the technical subsystem, but also the social subsystem including the job satisfaction.

7.4 Credibility and limitations

Qualitative research in the field of IS, in particular interpretive studies, has received an increasingly growing interest by the academic community journal editors. In the past decades, they were continuously spurred by serious and valuable contributions under various subjects and contexts, which many have been published in high esteem journals (Walsham, 1995b, 2006; Trauth, 2001). Therefore, many scholars started to publish detailed principles and practical guidelines for conducting IS research that have contributed to a rising confidence and to building an accumulative tradition in interpretive IS studies (Walsham, 1995a, 1995b, 2006; Myers, 1997; Klein and Myers, 1999, 2001; Trauth, 2001). For example, Myers (1997) provides a guideline of conducting qualitative research in IS, Walsham (2006) provides an extensive guideline that addresses the nature of interpretive IS case studies and suggests methods for conducting such research as a fieldwork using theory and analysing data., Lee (1989)

analyses case studies from a positivistic perspective, and Klein and Myers (1999) also analyse case studies but from an interpretive perspective.

Epistemological assumption of interpretivist research poses that knowledge about the real world is acquired through social constructions (i.e. language, consciousness, and common meanings). It focuses on human sense-making of the situations as they occur and on the meanings people attribute to those situations. On the bases of this epistemological assumption, according to Klein and Myers (2001), two strands of thought of interpretive research can be found. One is constructed based on language and its meaning, while the other is related to phenomenology and hermeneutics.

This study focuses on a set of issues, that contribute to the quality of the research using the interdependent (7) principles by Klein and Myers (1999) for interpretive field research as a reference (see Table 7.1). However, they suggested an important key of using these principles in any given research project that, "*It is incumbent upon interpretive scholars to appropriate them and use their own judgement as to their specific application*" and that scholars should appropriately decide "*.. whether, how, and which of the principles should be applied ..*" (Klein and Myers, 1999, pp. 88). Furthermore, examples are used to both illustrate best practices of conducting this research and what lack thereof.

Table 7.1: Reflection on the 7 principles of Klein & Myers (1999)

1. The Fundamental Principle of the Hermeneutic Circle This principle suggests that all human understanding is achieved by iterating between considering the interdependent meaning of parts and the whole that they form. This principle of human understanding is fundamental to all the other principles. **Application in this research:** Using his indigenous knowledge of a Kuwaiti HEI context, the researcher reflected his own interpretations of different stakeholders involved in the ISD projects. In doing so, he could iterate between the different technical versus social perspectives of those stakeholders and draw multiple view of different transitions and episodes of change events.
2. The Principle of Contextualization Requires critical reflection of the social and historical background of the research setting, so that the intended audience can see how the current situation under investigation emerged.

Application in this research: After discussing the ecosystem and cultural conditions of the Kuwaiti context (Chapter 1), our findings could be justified and offered deep evidence from projects A and B. In chapter 5, we pointed out cultural issues such as face to face interaction and the role of informal connections to override the formal procedures set by policy makers. This research draws evidence of other context related issues on how ISD projects are managed with a culturally heterogeneous environment and centrally structured higher educational institutions.

3. The Principle of Interaction Between the Researchers and the Subjects
Requires critical reflection on how the research materials (or "data") were socially constructed through the interaction between the researchers and participants.

Application in this research: The researcher kept an equal distance with all participants given his role as a visiting researcher who objectively interpret the change events and multiviews of stakeholders. Further, he has given equal opportunities to the concluding remarks offered by his literature review as well as the findings from the fieldwork. His final theoretical framework (See Chapter Six) offers a revised model based on the case evidence (through semi-structured interviews) and the recommendations from previous studies in the process approaches of ISD projects.

4. The Principle of Abstraction and Generalization
Requires relating the idiographic details revealed by the data interpretation through the application of principles one and two to theoretical, general concepts that describe the nature of human understanding and social action.

Application in this research: Our findings offer an up-to-date insight of Mumford's ETHICS approach how it benefits the ISD project management in HEIs in 2017. The revised framework of McLeod and MacDonell can help understanding the similar phenomenon in the Gulf and MENA regions where public universities operate in similar cultural and political environments.

5. The Principle of Dialogical Reasoning
Requires sensitivity to possible contradictions between the theoretical preconceptions guiding the research design and actual findings ("the story which the data tell") with subsequent cycles of revision.

Application in this research: Our research reflects a different preconception of the ISD project management as a sequence of case narratives than a water drop model that is proposed by the original framework of McLeod and MacDonell. Further, our analysis of two projects (at different levels of maturity and operation size) sheds the light on different iterations and learning loops that should be taken into consideration during the ISD project in public HEIs.

6. The Principle of Multiple Interpretations
Requires sensitivity to possible differences in interpretations among the participants as are typically expressed in multiple narratives or stories of the same sequence of events under study. Similar to multiple witness accounts even if all tell it as they saw it.

Application in this research: Our discussion in Chapter six offers a tractability of different insights of top management, middle managers, and technical engineers who use different terminologies to reflect their perception of the change events. As shown in Tables 4.2 and 4.3, participants from the same level of responsibility reflected different perceptions that have been interpreted differently by the researcher in Chapter 6.

7. The Principle of Suspicion
Requires sensitivity to possible "biases" and systematic "distortions" in the narratives collected from the participants.

Application in this research: Asking the participants retroactively about the change event offers a different insight than setting time scale and reflect the narrative of concurrent changes. Following a case narrative would give a deeper insight in future research. Further, it would lead to a different sampling technique where preferences would be given to specific people who are in charge of change at the time of its occurrence, not later.

7.5 Concluding Remarks

The interpretive nature of this research tends to explore the socio-technical interplay between the key elements of McLeod and MacDonell's ISD project management and how they shape the delivery of the final outcomes in the higher education context and specifically in Kuwaiti Governmental Universities. Such elements embed the critical factors arises from the phenomena overcomes the problem of the increasing number of IS projects that fail to meet their planned objectives.

The two chosen ISD projects have been already implemented in Kuwait University by the Centre of Information System, during its last strategic plan between the academic years (2005/2006 – 2010/2011), which was implemented by its IT team. This study explores to what extend the factors of McLeod and MacDonell's framework have affected the outcome of these two projects. The reason behind setting a timeframe for the implementation of these projects and link them to the university's strategic plan is to also understand if the KUCIS have achieved and met the University's objectives that are related to the development of IS infrastructure. The two projects were selected based on their importance and size, as both considered major IS projects that concern all the body of KU. The research sample tapped the team members of the two projects, including technical staff, top and middle level managers. The 23 interview participants were involved in certain roles and entitled to do a set of tasks in each project during their different phases of the implementation (***See Table 4.2 and 4.3***). Each participant was asked to take part of a face-to-face semi-structured interview where they have been asked to answer to 14 open-ended questions. The reason of having the interview

technique is to collect detailed perspectives of participants about the implementation of the two projects in a word form. Our purposeful sampling has considered the perceptions of both socially and technically oriented actors and their mapped their interpretation of the situated changes in resources, actions, project contents, and development processes.

Our findings referred to different cultural, legislative, political and contextual factors that could not be fully understood using our primitive theoretical framework. Following thematical data analysis and inductive coding, we reached to emerging themes and new CSF that led to a revised framework for IS project management in the developing context, and public Kuwaiti HEIs in specific.

7.6 Overall remarks, recommendations and future work

The following is an outline of the potential directions of future research that have emerged from the current research:

- The revised framework of this study could be further enhanced by the development of an organisational specific set of instruments within organisations. Those instruments could specify the organisational situation in terms of the different attributes and specification. Such attributes and specification could foresee and address, from a regulatory perspective, any potential events during the implementation of ISD projects.

- Since it was found that it is not necessary that all the factors in the structure of the revised framework be on the same level for ISD projects to be successful, this means that it might be that different types of IS may require different sets of combinations in different sectors/industries. This opens up the opportunity for future research, and highlights the importance of a thorough investigation of the implementation of the suggested framework.

- For the future works, it is worthwhile to consider cost and profitability dimensions in ISD projects and risks prioritisation. The findings of such study will help the maintenance managers decide which risk treatment to carry out in order to minimise unacceptable risks that has a negative impact during the project implementation, and therefore, its outcome. However, they should obtain more information about the risk factors for this purpose. In addition, the professionals and decision makers also need to know how these risks arise. In this sense, this research support conducting more studies about the ERP maintenance risks dimensions.

- Further research could address national environmental issues affecting the success/failure of ISD projects in an explicit way. Such issues include factors like; the national legislations, the national economic conditions, national ICT infrastructure, and national culture and religion. Such research could be also generalised on regional areas that have common factors.

- Future research could be also conducted to provide a more detailed description of the different levels of each factor and category of the revised framework. Furthermore, continuous research to update the characteristics or the suggested framework in order to keep up with the changes in the technology and its implications on organisational attributes such as systems, skill and staff.

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APPENDIX I: The ethical approval letter

College of Arts & Social Sciences
Room 626 Maxwell Building
The Crescent
Salford, M5 4WT
Tel: 0161 295 5876

16 October 2013

Ayman Alhabshi
University of Salford

Dear Ayman

Re: Ethical Approval Application – CASS120044

I am pleased to inform you that based on the information provided, the Research Ethics Panel have no objections on ethical grounds to your project.

Yours sincerely

Deborah Woodman
On Behalf of CASS Research Ethics Panel

APPENDIX II: The interview questions

University of Salford MANCHESTER

Version 2: 30/10/2013

Interview Questions

1- What was your role in the team of project (A, B or C)? And what tasks were assigned to you?

2- Which department(s) of KU was (were) in need of this project? And who are the beneficiaries of the implemented system? Why?
PROBE: Please explain.

3- Tell me about the implementation of project (A, B or C)? On what basis or reasons that system was selected? How long it took? And how it has been done?
PROBE: Please explain.

4- What the project was expected to deliver? And what did you achieve?
PROBE: Please explain. Can you give any examples? Anything else?

5- What is your opinion about the resources being used during the project? And were they sufficient to conduct the project?
PROBE: Please explain.

6- What were the major problems and challenges you faced during the implementation of project (A, B or C)?
PROBE: Can you give any examples where the problem(s) occurs? How did you resolve the problem(s)? What decisions were made to deal with them? Anything else?

7- Do you think that project (A, B or C) met its goals? Why?
PROBE: What are the unmet goals if any? Please explain.

8- Do you consider that project (A, B or C) was successful? Why?
PROBE: Please explain.

9- So overall, how do you evaluate the new system after the implementation (on a scale out of 10)? Why?
PROBE: Please explain.

10- How the team of project (A, B or C) were managed? And how did the team members of different sections cooperate?
PROBE: Can you give any examples? Anything else?

11- What is your opinion about the top management support during the

implementation of project (A, B or C)? Why?
PROBE: Can you give any examples? Anything else?

12- What was the level of training provided for the project team and the end-users after the project been implemented? And was it sufficient? Why?
PROBE: Please explain.

13- If you would be able to conduct the project again, what would you change? Why?
PROBE: Please explain.

14- Is there anything else you would like to say about project (A, B or C) that was not covered in my questions?

*** A and B refer to project 1 and project 2.**

College Ethics Panel Approval Form, PGR Version 2012-13

APPENDIX III: Participant consent form

University of Salford MANCHESTER

Version 1: 21/05/2013

Participant Consent Form

Title of Project: Study of Factors that Impact Information Systems Projects: A case Study of Kuwait University

Name of Researcher: Ayman Alhabshi

Participant Identification Number for this project: ☐

Please initial box

1. I confirm that I have read and understood the information sheet dated: [/ /2013] for the above study and have had the opportunity to ask questions. ☐
2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason. ☐
3. I understand that my responses will be anonymised before analysis. I give permission for members of the research team to have access to my anonymised responses. ☐
4. I agree to take part in the above research project. ☐

_____	_____	_____
Name of Participant	Date	Signature
Ayman Alhabshi	_____	_____
Lead Researcher	Date	Signature

To be signed and dated in presence of the participant

Copies:

Once this has been signed by all parties the participant should receive a copy of the signed and dated participant consent form, the letter/pre-written script/information sheet and any other written information provided to the participants. A copy for the signed and dated consent form should be placed in the project's main record (e.g. a site file), which must be kept in a secure location.

APPENDIX IV: The invitation letter for academic research

University of Salford MANCHESTER

Version 1: 21/05/2013

Invitation Letter for Academic Research

Dear _____,

You are invited to participate in a research studying Information System project at the University of Kuwait. This study is being conducted by Ayman Alhabshi and supervised by Dr Maria Burk from Salford business school, College of Business and Law, University of Salford, UK.

In this study you will be asked to answer questions regarding some of the projects within the university. You may leave blank any question you do not wish to answer. The results of the research may be published, but your name will not be used.

Take time to decide whether or not you might wish to take part. Your participation in this study is completely voluntary. If you think you might be interested, please take a look at the information sheet attached to this letter and sign the consent form. Your participation is highly appreciated.

Sincerely,
Ayman Alhabshi

Date:

Name of Applicant:

APPENDIX V: Information Sheet

Version 1: 21/05/2013

University of Salford MANCHESTER

Information Sheet

1. **Research Project Title:**
   Factors that Impact Information Systems Projects Outcomes: A case Study of Kuwait University

2. **Invitation paragraph:**
   You are being invited to take part in a research project. Before you decide, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with the interviewer. Ask if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part. Thank you for reading this.

3. **What is the project's purpose?**
   To explore the critical factors that lead to a successful implementation of information systems projects in the state of Kuwait from the perspective of the academic institutions in the governmental sector by considering cases from Kuwait University. This research is part of my thesis for the degree of: Doctorate of Science from the University of Salford.

4. **Why have I been chosen?**
   The interviews will be mainly with staffs who have been team members in some chosen projects conducted at KUCIS between 2005/2006 - 2010/2011. You have been chosen to be part of this research because you can provide this research a comprehensive illustration on your experience to these projects and to spot on the critical factors that affected its final outcome.

5. **Do I have to take part?**
   It is up to you to decide whether or not to take part. If you do decide to take part, you will be given this information sheet to keep (and be asked to sign a consent form) and you can still withdraw at any time without it affecting any benefits that you are entitled to in any way. You do not have to give a reason.

6. **What will happen to me if I take part?**
   This interview will take approximately 60 minutes. The main effort will be to conduct all interviews in person using a voice recorder with participants' consent.

7. **What do I have to do?**
   You need to answer questions informatively according to your experience in a specific project that has been implemented within KUCIS. You have the right to not answer any of the questions without giving a reason.

8. **What are the possible disadvantages or risks of taking part?**
   There are no possible disadvantages or risks of taking part of this research process. Any unexpected discomforts, disadvantages and risks to participants, if any, arises during the research should be brought immediately to their attention.

9. What are the possible benefits of taking part?

There are no direct benefits for the participants in this research process; however, the results, recommendations and conclusion of the study will be available for the public. The tangible benefits of the study arise by achieving the research objectives.

10. What happens if the research study stops earlier than expected?

If the research study stops earlier than expected, another appointment may be scheduled to complete the interview upon agreement. All collected information about you during the course of the research will be kept strictly confidential. You will not be able to be identified in any reports or publications. The collected data can be used in any further studies only by the researcher.

11. What if something goes wrong?

If something goes wrong or something serious occurs during or following their participation in the project, the participant can report a complaint (e.g. a reportable serious adverse event) to the researcher or to his supervisor. If you felt that the complaint, if any, has not been handled to your satisfaction by the researcher or the supervisor, then you can contact the 'Support Office' of College of Business and Law at University of Salford.

12. Will my participation in this research project be kept confidential?

All collected information about you during the course of the research will be kept strictly confidential. You will not be able to be identified in any reports or publications.

13. What will happen to the results of the research project?

All information will be entirely confidential and will not be provided to any third party. The results of the research will be available in the University of Salford. You will be informed of the results of the study if you wish.

14. Who is organising and funding the research?

The researcher is organising the research project and it is sponsored by the Kuwaiti government.

15. Who has ethically reviewed the research project?

This research is ethically approved via the college Research Ethics Panel (REP) of the University of Salford and its Code of Ethics, which reported to the Academic Audit and Governs Committee (AAGC).

16. Contact for further information:

Researcher Details:
Ayman H. Alhabshi
PhD Researcher
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Email: m.e.burke@salford.ac.uk

APPENDIX VI: KU approval letter to conduct interviews with KUCIS employees

التاريخ: 2013/11/19

إلى: المهندسة مها غازي القدومي المحترمة
مديرة مركز نظم المعلومات – جامعة الكويت

الموضوع: بخصوص جمع البيانات والمعلومات وإجراء مقابلات

بداية أود أن أتقدم بالشكر الجزيل والتقدير لموافقتكم على السماح لي بجمع البيانات والمعلومات وإجراء مقابلات مع بعض موظفي مركز نظم المعلومات بخصوص بعض المشاريع التي أنجزها المركز وذلك لمساعدتي في إتمام رسالة الدكتوراه.
كما أود التأكيد على أن نتائج هذه الدراسة ستكون مقصورة على الرسالة البحثية فقط ولن يتم ذكر فيها أي أسماء لأشخاص بعينهم أو مسماهم الوظيفي، وذلك تعهد مني بذلك.
كما يسرني أن أبعث لكم بنسخة من نتائج هذه الدراسة بعد انتهائي منها وإتمامي لمتطلبات حصولي على درجة الدكتوراه على أمل الاستفادة منها مستقبلا.

وتفضلوا بقبول فائق الاحترام والتقدير ،،،

أيمن حسن الحبشي
جامعة سالفورد – مانشستر
المملكة المتحدة